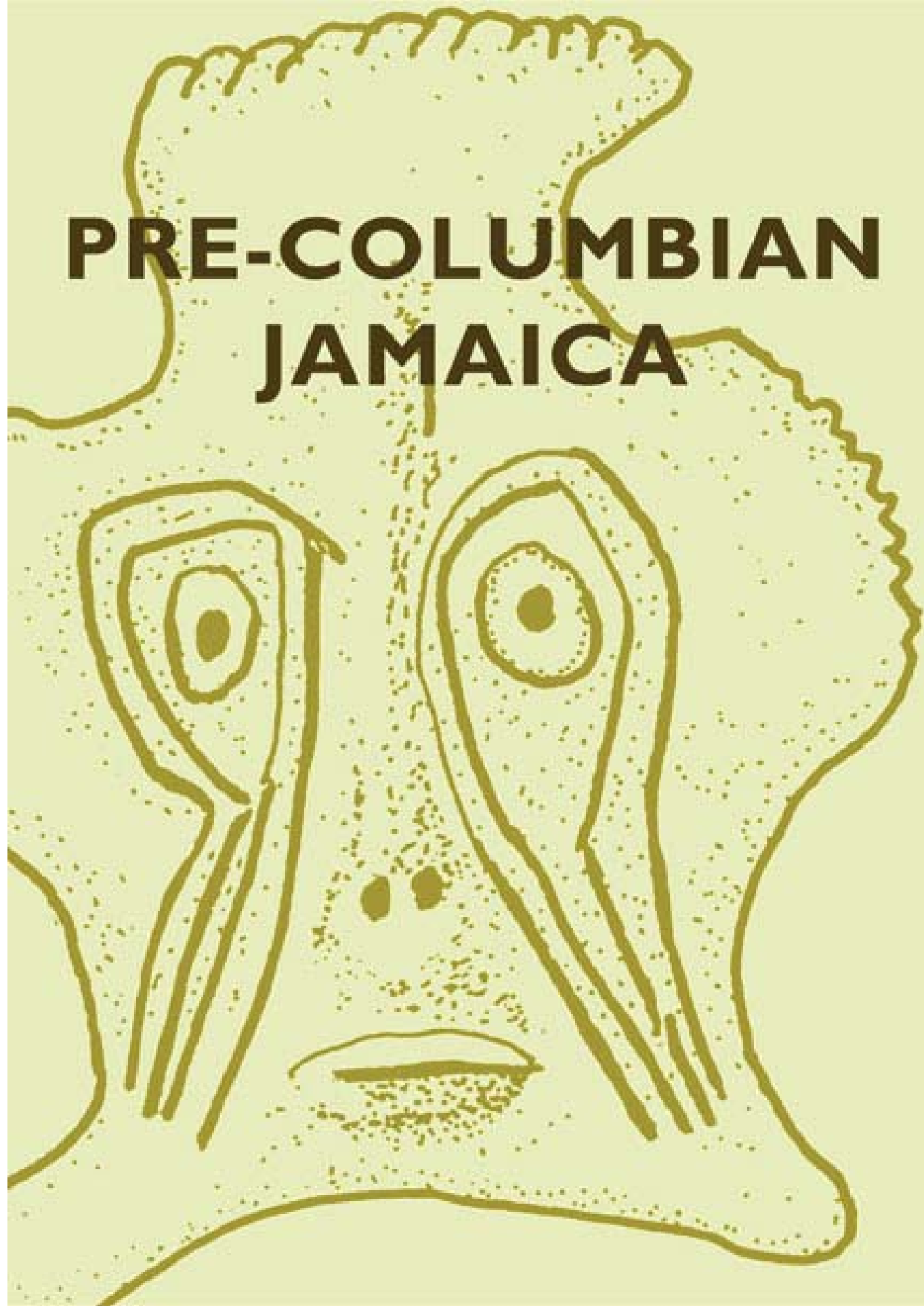


PRE-COLUMBIAN JAMAICA



P. ALLSWORTH-JONES

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CARIBBEAN ARCHAEOLOGY AND ETHNOHISTORY

L. Antonio Curet, Series Editor

PRE-COLUMBIAN JAMAICA

P. ALLSWORTH-JONES

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Front cover image: Anthropomorphic design on pottery from Round Hill (C1)
in the Lee Collection; drawing by Audrey Wiles.

Back cover image: Depiction of owl-like creature overlooking the northern
entrance to the Warminster rock shelter (Panel 7, EC15), St. Elizabeth Parish, as
traced by Ivor Conolley and Jannie Loubser and re-drawn by Jannie Loubser in
2005 (scale equals 3 cm).

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Aboukir, now on display at the National Gallery, and also color copies of the fish paintings done by the late Audrey Wiles, the species being identified by Mr. Karl Aiken. Thanks go to Professor Gerald Lalor and Dr. Mitko Vutchkov (The International Centre for Environmental and Nuclear Science [ICENS]) for undertaking the X-ray fluorescence (XRF) analysis of some of the potsherds in the Lee Collection, and also to Mrs. Jane Arimah (then working at ICENS) for helping to prepare some of the maps. Mrs. Joy Ellis (Jamaica Bauxite Institute [JBI]) has rendered indispensable help in setting up the Access program on the CD-ROM and making sure that it worked smoothly, and Dr. Anthony Newton (Edinburgh University) is also thanked for his advice in this regard. Mrs. Nichole Morgan (JBI) and Mrs. Karen Spence (UWI) rendered administrative support throughout, as did Mr. Parris Lyew-Ayee, the General Manager of the Jamaica Bauxite Institute. He took a keen interest in all aspects of the project, which without him would never have come into being at all. Not least, Dr. James Lee and his family continued to provide all the information and support they could, and it is hoped that this work will be a fitting memorial to him. It is a matter for regret that he did not live to see the final publication, but he knew that it was on the way. The project to create the CD-ROM was clearly a team effort, and this was acknowledged in the summary presented to the International Association for Caribbean Archaeology (IACA) in 2003 (Allsworth-Jones and Rodriques 2005). It must be said however that it would never have succeeded had it not been for the devoted effort and attention to detail displayed by Esther Rodriques in its execution. Without her work on the CD, in turn, this book could not have been written, and therefore the author's thanks go above all to her.

At the suggestion of the publisher, it was decided to include in this volume a reprinted version of J. E. Duerden's article of 1897, "Aboriginal Indian Remains in Jamaica." To obtain a copy of the original article that is in reasonable condition is not easy. Thanks go to Hermann van Asbroek for making available his copy, which came into his possession from the estate of the late Raymond Brandon, and to Jillian Galle and the members of her team, Leslie Cooper and Hal Sharp, for their assistance in scanning it to a DVD. The text was then finally transcribed by Judith Knight at The University of Alabama Press, and that is the form in which it appears here.

The Lee Collection CD-ROM Inventory

The CD-ROM is a joint work, to which many people have contributed, as follows.

Esther Rodriques was mainly responsible for the design and construction of the CD, with the assistance of others, particularly Mrs. Joy Ellis.

P. Allsworth-Jones wrote the texts that accompany the sites and artifacts.

Mrs. Alison West Martin and the late Audrey Wiles are the authors of the artifact drawings that are included in the CD, and the fish paintings are also the work of Audrey Wiles.

Simon Mitchell compiled the list of shells, and there are two full reports on the animal and human remains in the collection, as follows.

Lisabeth Carlson, zooarchaeological analysis of the Lee Collection of faunal material, and

A. L. Santos, human remains in the Lee Collection.

Robyn Woodward graciously permitted use of her illustrations from New Seville (A51).

Three figures from Image Cave are Copyright of the Trustees of the British Museum. El Museo del Barrio in cooperation with the British Museum provided the images.

An outline of the contents of the CD (the “facts and figures” of the collection) was presented to the 20th Congress of IACA in 2003 and is published in the Proceedings of that Congress (Allsworth-Jones and Rodriques 2005), but the CD itself has not hitherto been published.

PRE-COLUMBIAN JAMAICA

1 / Introduction

This book on Pre-Columbian Jamaica represents the first substantial attempt to summarize the prehistoric evidence from the island in one single published account since J. E. Duerden's invaluable article on the subject in 1897. The book is designed to provide a general commentary, which can be read right through as a continuous narrative. It can stand on its own if so desired, but that would not be to make the best use of it, since it comes together with a CD-ROM. Here the reader will find exhaustive information on 271 sites in Jamaica and on the material evidence from 191 of them. This material is now stored at the University of the West Indies, Mona Campus, in Kingston. It was presented to the university by James Lee in the year 2000, and the study of this material provided the impetus both for this book and for the CD-ROM. It is a matter for regret that he did not live to see the final publication, but he knew that it was on the way.

James Lee was a professional geologist who came to Jamaica in 1951 and worked here almost continuously until his retirement in 1986, as an employee of the Kaiser Aluminum and Chemical Corporation. During this time he was able to pursue his interest in archaeology and in particular the Pre-Columbian settlement of the island. His principal aim was to locate and accurately map all the known sites and to investigate any new ones that were brought to his attention. In 1965 he founded the Archaeological Club of Jamaica, which in 1970 became the Archaeological Society of Jamaica. He edited and almost single-handedly produced the newsletter "Archaeology Jamaica" from 1965 to 1986.

This recorded his activities and those of other members of the Society, and the growth in the number of recorded sites was chronicled year by year.

Following his retirement, Lee hoped that he might be able to establish a museum at his residence in Runaway Bay, but with the passage of time, this hope was not realized, hence his decision to hand over his collection to the University of the West Indies at Mona. Thanks to an initiative of the General Manager of the Jamaica Bauxite Institute, Parris Lyew-Ayee, funding was obtained to enable the study of the collection to be undertaken. This work is the result. It makes full use of the material and the information accumulated by Lee, but it is not confined to those sources. It endeavors to deal with the prehistory of Jamaica in all its aspects, and to bring the story right up to date. As such, it is hoped that both specialists and general readers will gain an understanding of the extent of our knowledge of this subject, and Jamaica will no longer appear to be a “black hole” in the prehistory of the Caribbean, as it is sometimes erroneously said to be.

A word on nomenclature. In accordance with the practice of the time, Lee always referred to the Pre-Columbian inhabitants of Jamaica as Arawaks, and this name has been retained to describe his collection (Allsworth-Jones and Rodriques 2005). Clearly, in these days the name Taíno is generally preferred, and there are good reasons for that. Nonetheless, as explained in Chapter 3, the choice between the two is by no means self-evident. Hence, if we refer to these people as Pre-Columbians we will be on safer ground. It is hoped that this book and the CD-ROM together will provide a better understanding of the original inhabitants of the island.

Arrangement of the Book

Following this Introduction, the book is arranged in nine chapters followed by a Conclusion. Chapter 2 deals with the history of archaeological investigation in Jamaica. Since Duerden’s time, much work has been done on the island, but it is not surprising that the outside world knows little about it, because so few of the excavated sites have been properly recorded and published. What is known is summarized here. So far as possible, the narrative has been carried forward up to the present day. Chapter 3 outlines the general frameworks for Caribbean prehistory, without which Jamaican prehistory cannot be understood. The currently accepted terminology is explained and attention is drawn to the limitations of an exclusively culture-historical model. As mentioned above, this chapter also considers the Taíno/Arawak question. Chapter

4 considers the environment, fauna, and flora that characterized Jamaica and the Caribbean during the period in question. These general background chapters are followed by others that deal more specifically with the material catalogued in the CD-ROM.

Chapter 5 explains the nature of the Lee Collection and the rationale underlying the methodology employed in its analysis and exposition. Linkages to the CD-ROM are described in detail. Chapter 6, mapping the sites, summarizes Lee's work in this regard and provides a quantified assessment of the results. Chapter 7 describes the main cultural variants that are present on the island and considers their chronology. In doing so, it draws not only upon Lee's data but also upon more recently excavated material in St. Mary parish, recovered in the course of excavations conducted jointly by UWI and Murray State University. Chapter 8 describes the petroglyphs and pictographs that exist in Jamaica, and suggests some parallels in terms of motifs recognized elsewhere in the Caribbean. Chapter 9 gives as full a description as possible of the sites in Jamaica that have been excavated, and of the faunal and environmental indications these reveal. Seven such sites are compared in terms of the five broad ecological groups recognized by Elizabeth Wing at White Marl and elsewhere. Chapter 10, the last before the Conclusion, deals with the burials and human remains found on the island, drawing, among other things, upon the information contained in A. L. Santos's report in the CD-ROM concerning those remains that form part of the Lee Collection.

A list of principal excavated sites gives full details concerning 32 such sites on the island, with three faunal tables. This is intended as reference material, as is the comprehensive list of cited works. In addition, the reference material includes a complete list of the sites recorded by Lee with their codes according to his system, and a list of the illustrative material that is included in the CD-ROM in the form of Appendixes (each of which is attached to a certain site or sites).

The Lee system of recording is based upon the parishes into which Jamaica is divided and which serve as the units of local government in the country. There are 14 such parishes, or 13 if Kingston and St. Andrew are combined into one. A map of the country with the parishes and Lee codes is shown at Figure 1.

As can be seen on the map, the codes selected for the parishes were as follows:

A: St. Ann, C: Clarendon, E: St. Elizabeth, H: Hanover, J: St. James, K: Kingston and St. Andrew, M: Manchester, O: St. Thomas, P: Portland, S: St. Catherine, T: Trelawny, W: Westmoreland, Y: St. Mary. According to this system, therefore, Round Hill (the first site recorded in Clarendon parish) becomes



Figure 1. Jamaican parishes and Lee codes.

C1. But, in addition, Lee considered that caves should be listed separately from open-air sites, and therefore Milk River (the first such site in the parish) becomes CC1, the second C standing for cave. And so forth across the island. Further details concerning the way in which Lee mapped the sites are given in Chapter 6.

Navigating the CD-ROM

1. The opening page of the CD-ROM contains six “entry points” labeled: sites, quick queries, Lee family collection, picture gallery, bones and shells, and map.

2. Sites. This contains the basic information about every site on the system. The sites are listed by name alphabetically and the user is required to “select a site to view.” When this is done, a window will appear with six different headings: geographical data, inventory, decorative techniques, motifs, vessels, water jars. As an example, the user could click on White Marl (S1). The window will open on (1) geographical data. Most displayed categories, in this case, contain information, but a few are blank (for example, petroglyph and pictograph) meaning that this site does not contain those features. Each site is marked on a map, of which there are 129 in total, some containing more than one site. The site positions on the maps are as noted by Lee. There is a “summary” that pro-

vides general information about each site, to which may be attached Appendixes with published plans and sections or other such information. There are 56 of these Appendixes in the CD-ROM, as listed here. The heading “Sites Report” brings up a list of all the sites within the parish that can be printed.

The user can then move on to (2) inventory. This provides quantitative data about the artifacts at the site. There is also a “commentary,” to which images with certain of the artifacts are attached. Additional data are available with regard to the shells, human bones, and animal bones that are present, if the user clicks on these displayed categories. In the case of the human bones, the commentary relates to the parish as a whole, so in the case of White Marl (S1) we can see details both of this site and of Naggo Head (S12). The heading “Inventory Report” brings up a list of all the recorded inventories within the parish that can be printed.

Window (3), decorative techniques, contains a table with quantitative information in three columns labeled lugs, rims, and shoulders. Similarly, window (4), motifs, provides information in terms of six categories, and there may be appropriate illustrations attached.

Window (5) provides information about any complete vessels that may be present, and (6) does the same for water jars, again with appropriate illustrations attached in some cases. There are drawings or photographs of 35 complete vessels in the collection. The numbers of complete vessels recorded per site are as follows: Belle Air (AC4) 4, Round Hill (C1) 8, Braziletto (C2) 1, High Dome Cave (CC8) 1, Taylor’s Hut #1 (CC15) 11, Fort Charles (E2) 3, Hartfield (J1) 2, Fairfield (J3) 1, Bogue (J4) 1, Spot Valley Cave (JC7) 1, and White Marl (S1) 2.

Complete vessels may be either drawn or photographed or both, and their coding reflects this. Thus the first vessel (v1) at Round Hill (C1) is recorded in three ways as follows: c1v1 is a first drawing, c1v1v2 is a second version (v) of the drawing, and c1v1p is a photograph (p) of the same vessel. Not all vessels are recorded as elaborately as this, but the pattern is the same throughout. Illustrations of the vessels can be called up in the usual way, for example, if White Marl (S1) is selected and the viewer wishes to see ALL the artifacts, 1–25 will be available, followed by the two complete vessels s1v1 and s1v2.

The general pattern that can be observed at White Marl (S1) or Round Hill (C1) is repeated at all other sites, but the amount of information available in any one case is varied. The objective is to provide the user with everything we know about any particular site, and about any artifacts from it that may be in the Lee Collection.

3. Quick Queries. This provides a “way in” for the user to find out about certain sites in terms of given attributes, as an alternative to trawling at random through the whole set. When the window is opened, it is divided into two sections: (1) geographical, and (2) general queries.

(1) Geographical queries. This provides information on the sites in the system in terms of elevation in meters (5 categories), areas in square meters (middens only, 4 categories), and distance from the sea in kilometers (5 categories). A search can be conducted in terms of these categories and their combinations. Thus, for example, if it is specified that the user is interested in sites that are below 50 meters in elevation, under 5,000 square meters in size, and less than 2.5 kilometers from the sea, 15 sites will appear listed according to their parish codes. A double click on any one of these sites will reveal the full details about it.

(2) General Queries. This provides 10 possible lists of the sites, arranged alphabetically, according to specified criteria. All the lists can be printed out, if so desired. They are as follows. 1 All sites. 2 All sites within a parish. 3 All sites within a drainage basin. 4 All excavated sites. 5 All sites with petroglyphs. 6 All sites with pictographs. 7 All (cave) sites with burials. 8 All sites with human remains (both caves and middens). 9 All caves. 10 All middens. As before, a double click on any one of these sites will reveal the full details about it.

4. Lee family collection. Photographs of 57 artifacts from 20 sites are displayed in this section. As detailed in Chapter 5, these images provide an excellent introduction to the kind of Pre-Columbian material that exists in the island and was collected by Lee.

5. Picture Gallery. This window is divided in two: 1 Artifacts, 2 Fish.

(1) Artifacts. This option allows the user to see larger (and generally clearer) versions of the artifact illustrations that accompany the individual site inventories. The window offers a choice of selection by parish, site, category, and type. For example, the user could select all parishes, thus all sites, the category “celt,” and the type “conch,” in which case seven images would be available (some drawings, some photographs) labeled by parish, site, and code. The use of this option to view the artifacts is strongly recommended. Altogether in this section there are 538 line drawings and 213 photographs.

(2) Fish. This facility provides a view of 20 fish paintings executed by the late Audrey Wiles. Each has its Latin and English name, and there is a general list as well.

6. Bones and shells. This window is divided into three parts: 1 human bones, 2 animal bones, 3 shells. (1) human bones. There are three options under this heading. First, the complete text of Santos's report on the human bones is available as a PDF file. Second, under "statistics" there is a list of sites with human bones, arranged alphabetically. When the user double clicks on any particular site, the report on that site (together with all the others in that parish) will appear, together with illustrations as appropriate. There are 62 photographs in this section arranged as 43 labeled figures, with lettered subdivisions. Third, there is an inventory of the human bones and teeth, in which all the available specimens are listed by parish. (2) animal bones. There are two options under this heading. First, the complete text of Lisabeth Carlson's report is available as a PDF file. Second, under "statistics" there is a list of sites with animal bones, arranged alphabetically. A double click will allow the user to see which animal bones are present at any site. (3) shells. The shells are classified into a number of categories. Lists by parish and site can be generated, but there is no commentary in this case.

7. Map. This is the map of Jamaica that forms part of J. E. Duerden's article published in 1897 on "Aboriginal Remains in Jamaica," the full text of which is also printed here.

2 / History of Investigation

First Observations

Following the English occupation of Jamaica, occasional references were made to the Pre-Columbian inhabitants of the island, during the eighteenth and the early part of the nineteenth centuries. Thus, Sir Hans Sloane in 1707 recorded that a certain Mr. Barnes “who lived on the Red Hills four miles from Guanaboa” in what is now St. Catherine parish had found a cave with human bones and potsherds attributed to the Indians (Duerden 1897:28). Then, in 1774 Edward Long described the discovery of an Indian burial, 11 years before, by the side of the old road from Ocho Rios to St. Ann’s Bay in what is now Carinosa Gardens (AJ 1973, 3:2).¹ Most remarkably, in 1799 Isaac Alves Rebello exhibited three carved wooden “images” from Jamaica to the Society of Antiquaries in London, which are now kept in the British Museum. They were said to have been found in 1792, “in a natural cave near the summit of a mountain, called Spots, in Carpenter’s Mountain,” by a surveyor (*Journal of the Institute of Jamaica* 1896). There is a bird-faced figure, a male figure now supposed to be Boinayel the Rain Giver, and a *cohoba* stand with a further male figure (Appendixes 44–46). Lee thought it possible that this site might well

1. AJ refers to the newsletter “Archaeology Jamaica” that James Lee edited from 1965 to 1986. Each annual volume was known by the year. Usually there were four issues per year, although in the early years there were more. Thus, (AJ 1966, 11), for example, is the eleventh issue for the year 1966.

be what is now known as Image Cave in Manchester parish (MC3) (AJ 1966, 11:1). Finally, in 1860, Richard Hill drew attention to the existence of “an Indian village . . . at the Marl Hill” where the highway descended into the plain of Caymanas. He pointed out that “in times past the Rio Cobre swept at the foot of this hill,” until it was diverted by a storm in 1722. Apart from pottery and shells, he found also “portions of human skeletons” (Duerden 1897:14–15). This site was to become well known as White Marl (S1).

Duerden and Cundall

The serious study of the Pre-Columbian past of the island, however, only got underway in the last years of the nineteenth century, thanks to the Institute of Jamaica, and in particular to two remarkable men, Frank Cundall and J. E. Duerden. Frank Cundall, the author of many works on the history of Jamaica, was secretary and librarian of the Institute from 1891 until his death in 1937. J. E. Duerden served as curator of the Institute’s museum from 1895 until 1901, later going on to become professor of zoology in Grahamstown, South Africa (*Nature* 1937). A man of wide scientific interests, his study on the “Aboriginal Indian Remains in Jamaica,” published in the Institute’s journal in 1897, was the first general survey of its kind, an essential reference point for further work on the island, which retains its value today. Duerden’s article is now difficult to consult, or even to find, in Jamaica let alone anywhere else, and that is why the decision was taken to republish it as part of the present volume. It was originally published as a follow-up to an exhibition of Pre-Columbian remains that was organized at the Institute in 1895. Duerden reported separately on the open-air sites, or “kitchen-middens,” and the “burial caves,” which, he pointed out, had served as “natural ossuaries” and not as places of refuge. He gave detailed accounts of eight open-air sites, as well as shorter descriptions of some others, not all of which Lee was able to relocate. The eight include Wareika (K2); Norbrook (K5); Harmony Hall (C7); Mammee Hill and Spotty Hill, both on the Tryall Estate in St. James (later identified by Lee as J20 and 22); Stewart Castle (T4); Retreat (A13); and Cranbrook (A20). Duerden’s description of the “burial caves” is particularly important, since much of the material has subsequently disappeared. There were six of these caves immediately east of Kingston, four on the south coast, and four in the west of the island. The group east of Kingston included Halberstadt (KC1), Dallas Castle (KC2), Cambridge Hill (OC1), Bloxburgh, Richmond Hill, and Botany Bay. Lee him-

self was not able to relocate any of these sites, but the coordinates of the first three are recorded in Fincham (1997). Lee was also not able to find some of the others, including a cave on Great Goat Island in Old Harbour Bay.

Halberstadt attracted particular attention because of the large number of human remains found within it, a minimum of 34 individuals according to Duerden (1895). W. H. Flower (1895) and A. C. Haddon (1897) studied some of the remains, and as a result their physical characteristics were fairly clearly established. The practice of cranial deformation was noted, and Duerden commented that both at Richmond Hill and at Great Goat Island skulls had actually been found within “mortuary vessels” intended for the purpose. Eight complete vessels were obtained at Richmond Hill, and others elsewhere (Duerden 1897:Plate V). There were 32 perforated *Oliva* shells at Richmond Hill, and at Halberstadt there were portions of a cedar canoe and a *lignum vitae* mortar, interpreted as part of the funerary ritual. Finally, Duerden drew attention to the existence of four caves with rock carvings or petroglyphs: Dryland (YC1), Pantrepant (TC2), Kempshot (JC1), and Mountain River Cave (SC1). The last was afterward lost for many years, until Lee relocated it in 1954. Duerden photographed a rock carving inside the cave and also one on a “fallen piece of rock” outside (Appendixes 18 and 19), the latter being particularly valuable because this rock does not now seem to be readily visible.

Frank Cundall continued to keep track of Pre-Columbian discoveries in Jamaica, updating Duerden’s map from time to time. His final list of “Arawak caves, middens and rock carvings” was published posthumously as an appendix to P. M. Sherlock’s book *The Aborigines of Jamaica* in 1939. During the period between 1897 and 1939, a number of excavations were carried out on the island, notably by G. C. Longley and T. de Booy. Longley “passed the winter months” in Jamaica for six years prior to 1914, and during that time he excavated five sites “in the interior of the island”: Armadale (A2), St. D’Acre (A3), Scarborough (A10), Green Hill (A46), and Logie Green (C12). As a result of this work, he presented 1,500 objects to the Museum of the American Indian in New York, but the record of the excavations is sparse indeed (Longley 1914). At St. D’Acre he dug trenches “sometimes 5 or more feet deep,” and at Green Hill his work was even more “extensive,” but apart from that we know nothing. De Booy carried out work at Retreat (A13), which had already been investigated by Duerden. He reported and mapped 16 middens, four of which he excavated (de Booy 1913:Figure 111). He concentrated in particular on midden 4. Interestingly enough, he stated that his aim here was not to obtain more archaeological material but to procure “as accurate information as pos-

sible regarding the location of the huts and the exact limits of the shell and ash deposits,” and he came up with what was essentially a settlement model as a result (de Booy 1913:Figure 115). Cundall listed one other open-air site that has proved to be quite controversial, “a mound near Old Harbour” from which finds were reported by Sven Lovén (1935:Plate XIII). He acquired 75 bifacially worked stone points said to be from this locality. The general opinion (e.g., Howard 1950:118–119) has been that these pieces did not originate in Jamaica, and Lee was unable to relocate the site. Nonetheless, the subsequent discovery of bifacially worked stone points at Green Castle (Y25) and seemingly at Jack’s Hill (K1) demonstrates that this class of artifact is not in itself foreign to the island.

Howard and Vanderwal

The next phase of investigation in Jamaica came after the Second World War, with the work of R. R. Howard (du Quesnay 1965a). In 1950 Howard completed a Ph.D. thesis at Yale University on “The Archeology of Jamaica,” the main conclusions of which were summarized in *American Antiquity* in 1956 and (with slight emendations) in 1965. Howard spent four months on the island in 1947 and 1948 making a general survey, building as he said on the work of Duerden and others. He listed 75 middens, 27 caves, and nine localities with rock carvings. These included both sites previously discovered and “those found by the author during the course of the survey.” Quite a high proportion of the latter could not subsequently be relocated by Lee. Two of Howard’s sites deserve particular mention, Braziletto (C2) and Cambridge Hill (OC1). Howard referred to Braziletto as Salt River or Hillside Farm. He conducted excavations here in 1947 in connection with construction work that was being carried out at the time by the West India Sugar Company (Howard 1950:51–55). Five trenches were dug at three localities, to a maximum depth of one meter. Howard interpreted it as an “excellent example” of a settlement pattern whereby the inhabitants moved “from midden to midden within a given site,” although it could alternatively have represented a single “occupation of considerable size but relatively brief duration.” At Cambridge Hill, Howard relied on the results achieved by C. B. Lewis, who in 1946 investigated a cave adjacent to but apparently not identical to the one mentioned by Duerden. According to Howard (1950:102–103), Lewis recovered the remains of at least 40 individuals and several complete pottery vessels, as well as a miniature *duho* made of lignum vitae (Appendix 20). C. B. Lewis never did publish his promised de-

scription of the site, but fortunately Professor W. F. Harper (1961–1962) was subsequently able to study 24 of the crania (Appendixes 32–35). In the light of Lewis's observations in the caves of Portland Ridge, Howard agreed that some of them could have been used occasionally for occupation purposes, but in general he agreed with Duerden that caves were used “almost exclusively for burial purposes” (Howard 1956:48).

Howard expended much time on the study of the available artifacts, particularly those in the Institute of Jamaica, although, as he pointed out, many of them had lost all indications of provenance. He found that the pottery was “remarkably homogeneous,” most of it belonging to one “major style” that he equated with the Meillac group recognized elsewhere in the Greater Antilles (Howard 1956:49). He later felt that the time had come to “give the style a name of its own,” and he proposed the term White Marl, “since it is at this site that the style appears in its most characteristic and complete form and it is here that its development can be traced over a period of several centuries” (Howard 1965:252). His description of this style retains its validity today. He pointed out that there are two basic shape categories: round bowls and boat-shaped vessels. He listed the main decorative techniques as incision, punctation, application, modeling, and perforation, the last intended to permit suspension of the vessels. Incised designs were “invariably geometric,” a pattern of alternating oblique parallel lines being especially common. “Lugs and handles show the greatest variation and are the most frequently decorated features of Jamaican pottery” (Howard 1950:148). The only convincing “variant substyle” that he himself recognized was the one he identified at Fairfield (J3) and that he termed “Montego Bay” (Howard 1950:57–58, 145–146; 1956:54; 1965:254). As he pointed out, the sherds are thick and coarse, and they are decorated by means of deep heavy incisions, often occurring on bands around the rim, usually referred to in Jamaica as fillets (Howard 1965:Figure 1a). Otherwise, Howard was very cautious, concluding that “as the archaeology of Jamaica becomes better known, it will doubtless be possible to distinguish both areal and temporal differences in the pottery of the island, but such analysis must await detailed stratigraphic excavation of a large number of sites” (Howard 1950:158).

In general, Howard concluded that the “Jamaican Indians undoubtedly belonged to the Sub-Taino branch of the Arawak stock” (Howard 1956:47). He emphasized that the great majority of the sites known at that time were within five miles of the coast, almost always on or near the tops of low lying hills, locations chosen not for reasons of defense, but because they were “healthful and pleasant.” His overall assessment of “Jamaican culture” in the prehistoric pe-

riod was that it was conservative, poor, stagnant, and peripherally retarded, “possessing only limited interest in itself” (Howard 1950:175). In his published account, he stated that “Jamaican archaeological remains are not very spectacular and offer few features to excite the interest or curiosity of the casual observer” (Howard 1956:45). Despite Howard’s own enthusiasm for the subject, and his sterling work, it is possible that these remarks did a disservice to the country, since they were not at all calculated to arouse the interest of outsiders in the years to follow.

Howard’s dissertation did have one immediate beneficial effect, in that it evidently persuaded Marian de Wolf to restudy and publish the material from three sites she had excavated 20 years before, so that it could be “correlated” with the findings reported by Howard (de Wolf 1953). These were the sites of Retreat (A13), Windsor (A19), and Little River (A15). At the first site, de Wolf excavated a mound between de Booy’s middens 6 and 7; the potsherds were considered to match those found by him, and, following Howard, were characterized as “Jamaican Meillac.” At Windsor, de Wolf carried out a “partial excavation on the western brow of the hill.” She concluded that the potsherds were “in the Jamaican Meillac tradition but have characteristics of Howard’s Montego Bay sub-style.” Little River was more of a rescue situation, in that the “largest midden was half washed away by the sea” in 1933, and the destruction of the site by the waves evidently continued in the ensuing years. This site produced a “hitherto unreported” type of pottery, which de Wolf compared with the “early Ostiones style” as known in Puerto Rico. The pottery was carefully described, and this in fact became the type site of what Lee later referred to as the “Jamaican Redware culture” (Lee 1980).

Clearly, therefore, de Wolf’s excavations have a lasting importance, but it should be noted how slender was the material base on which she founded her conclusions. At Little River, a sample of about 225 sherds was obtained, but only 31 were saved, of which five were fragments of griddles, so the very good definition given was based on a total of 26 pieces. The numbers of sherds saved and described at Retreat and Windsor amounted to 77 and 28 respectively, about 5 to 10 percent of the material recovered. Little attention was paid to other kinds of artifacts, the faunal samples collected were few and random, and no plans or stratigraphic drawings were made.

Howard’s dissertation was also followed up by his excavation work at White Marl, a work that, at least until recently, was by far the most extensive carried out at a single location in Jamaica. His excavations took place in 1958, 1961, 1963, and 1964 (Howard 1961–1962, 1965; Howard and Lewis 1961–1962).

He had intended to continue the work on a larger scale, but this was prevented by his sudden death in 1965. A report on the 1964 excavations was subsequently prepared by Silverberg, Vanderwal, and Wing (1972), but obviously this is not a substitute for the complete monograph that Howard would surely have published had he lived. In his first three seasons, Howard excavated three middens, and also a bigger area between them, in an endeavor to find postholes that might be indicative of house structures. In this he did not succeed. He did however confirm earlier observations by J. S. Tyndale-Biscoe (1954) concerning the presence of marl layers, which he thought might have been deliberately created from time to time in order to “sweeten” or “freshen” the site. In 1964 Howard excavated two trenches in two middens, A (to the north) and B (to the south), as shown by a “schematic representation” in Silverberg and colleagues (1972:Figure 3). This is the only plan we possess of the site (Appendix 30). The midden deposits were more than 7 ft deep. There are 11 radio-carbon dates from Howard’s excavations, which, uncalibrated, span the range from A.D. 877 ± 95 to A.D. 1490 ± 120 .

Howard’s work was carried on by R. L. Vanderwal, a former graduate student of his. Vanderwal excavated at White Marl in 1965, 1966, 1967, and 1968, as we know from his master’s thesis (Vanderwal 1968a) and from two unpublished reports that he submitted to the Institute of Jamaica in 1967 and 1968 (Vanderwal 1967, 1968d). During these operations, Vanderwal confirmed what Howard had suspected, that White Marl had been occupied during the historic as well as the prehistoric period, although the deposits in the main part of the site had not been disturbed by this. The unpublished papers in the Institute include a stratigraphic profile, to a depth of 7 ft, from square 13 I (Appendix 31). This is one of the squares in Howard’s mound B, but presumably the unsigned profile was the work of Vanderwal. It is the only stratigraphic drawing we possess from the site. It is clearly schematic, but it does indicate well the way in which the deposits alternated. The final work to date at White Marl was carried out by James St. Clair in 1969. He claimed he had found what had always eluded Howard, postholes forming a hut foundation (St. Clair 1970), but since no supporting evidence was ever published there is no means of assessing the validity of this claim. It should be noted that over the period from 1958 to 1969, 15 burials were excavated at the site, with 16 individuals, of whom three were children. These discoveries finally dispelled the notion that Pre-Columbian burials were confined to the caves.

In 1965 a museum and laboratory at White Marl were opened and were managed by Vanderwal and his successors for the Institute of Jamaica. The

buildings were severely damaged by Hurricane Gilbert in 1988, and the archaeological material was transferred to the Jamaica National Heritage Trust (JNHT) in Port Royal, where it remains, despite the reopening of the White Marl museum in 2002. The bulk of the material comes from White Marl itself, and it has never been systematically studied. Despite all the work done over the years, therefore, White Marl remains, thanks to various misfortunes, essentially a lost opportunity, a headless colossus of Jamaican prehistory.

Vanderwal was concerned with a great deal more than White Marl during the four years he spent in Jamaica, on contract to the Institute, from the beginning of 1965 to the end of 1968. His principal objective during the first part of his stay was to gather material for his master's thesis, which was concerned with the analysis and seriation of Pre-Columbian pottery throughout the island. He attended the second International Association for Caribbean Archaeology (IACA) congress in Barbados in 1967, where he outlined his theoretical approach (Vanderwal 1968c), and very brief references to his work were included in two articles published in Jamaica (Vanderwal 1965–1966, 1968b), but otherwise his achievements are known only from unpublished sources. His thesis was based on material he obtained up to the end of 1966 only. He analyzed pottery samples from 18 surface collections, 10 on the north coast and eight on the south coast (Vanderwal 1968a:Figures 4 and 5). Lee provided much of this material. In addition, he included material from six excavated sites, three on the north and three on the south (Vanderwal 1968a:Figures 6 and 7). For the south coast, he used the potsherds from White Marl that he had excavated in 1965 and 1966, not Howard's material. These came from a trench (White Marl IV, with 11 levels) and a test pit (White Marl VI, with seven levels). He also used Howard's excavated material from Braziletto (C2) and further excavated material from Rowe's Corner (M3). A 6 x 6 ft pit was excavated to a depth of 4 1/2 ft at this site by Lewis Purnell in 1966, but the results were never fully published. On the north coast, Vanderwal used the results of his own excavations at Fairfield (J3) and Hartfield (J1) in 1966. He referred to the latter site as Mammee Hill under the impression that it was equivalent to Duerden's site of that name, a misidentification that was subsequently corrected by Lee. Vanderwal also used the material from Father Osborne's excavations at Bengal (A8). These excavations were conducted in 1962–1964 but have never been reported in detail (AJ 1965, 2:1–2). Vanderwal obtained an uncalibrated radiocarbon date of A.D. 1180 \pm 100 on charcoal supplied by Osborne from the site. As he said, the six excavated sites provided a "primary control" for his seriation exercise on both the north and the south coasts.

Vanderwal provided a detailed account and defense of his methodology. In his view, “typology” (a concept constantly invoked in archaeological writings) could, so far as pottery is concerned, relate only to complete vessels. These are not what are usually found on archaeological sites. It is fragmentary potsherds that are the object of study. Each potsherd found may possess one or more attributes, alternatively called elements, and Vanderwal listed 32 of these in his Jamaican sample as a whole. By experiment, he found that many of these attributes were correlated; hence, they could be combined into a smaller number of what he termed “modes.” His final analysis was therefore conducted in terms of nine modes (i.e., combinations of attributes) although only six of them were present in his south coast sites. Since, as he said, the number of attributes may be more than one on any single potsherd, and they are analyzed independently, their number will exceed the number of potsherds present at any one site, and the same is true of the modes derived from the attributes. This point may be illustrated by reference to the analysis Vanderwal carried out on Howard’s pottery from his 1964 excavations reported in Silverberg and colleagues (1972:13–17 and Figure 5). One thousand, three hundred twenty-five potsherds from Howard’s trenches A and B produced 2,560 elements included in six modal classes. Only the totals for the modes are listed in Vanderwal’s thesis, hence we do not know how many sherds from his 24 sites were at his disposal. The classes used in Vanderwal’s study of Howard’s material differ slightly from those he used in his thesis, but nonetheless an interesting comparison can still be made between the results for White Marl obtained in 1964 and those Vanderwal himself obtained in 1965 and 1966.

The nine modes finally chosen are as follows: The first three relate solely to the form of the rim, and are mutually exclusive. They are (1) plain rims, (2) filleted rims, and (3) beveled rims. The remaining six are decorative categories, and are not mutually exclusive, that is, they may occur simultaneously on any given potsherd. (4) is the form of incision on the shoulder of a vessel that Vanderwal called open or closed “alternate-oblique,” a classification that has been adopted in this work. (5) refers to incisions on fillets (Vanderwal 1968b:r–u), and (6) refers to incisions on the tops of applied clay strips (Vanderwal 1968b:v–w). Both these characteristics occurred on the north coast only. (7) embraces “serrated” handles, ribbons, and lugs, a style that no doubt here would be referred to as “impressed” (Vanderwal 1968b:e–n). (8) refers to “affixed” handles, ribbons, and lugs, which are not decorated. (9) is “other decoration,” including punctations, crosshatch incisions, and serrations on rims. According to Vanderwal, this miscellaneous category was also confined to the north coast.

Vanderwal's two diagrams showing his stratified sites on the south and north coast have been redrawn and are shown here at Figures 2 and 3. The total number of attributes on the south coast is 2,777, whereas on the north coast the corresponding total is 883. The most marked tendency on the south coast is for filleted rims to increase over time at the expense of plain rims. This tendency was already manifest in Howard's 1964 sample from White Marl (Silverberg et al. 1972:Figure 5) but there is a difference. In 1964 filleted rims were still present, albeit in reduced numbers, at the base of the sequence. In Vanderwal's case, fillets entirely disappear in the lower part of the White Marl succession, even though it has to be said that the quantity of material available in these levels is in any case small. The difference between the two diagrams is important for historical reasons, in that on the basis of the earlier sequence, some Jamaican archaeologists (in ignorance of Vanderwal's results) came to assume that any site without fillets must antedate White Marl. Clearly that is erroneous. Vanderwal regarded all three sites on the north coast as belonging to what he called the "Fairfield complex," equivalent to Howard's Montego Bay substyle. In the case of J1 and J3, there is no doubt about that, but whether Bengal can be so classified has hitherto been open to doubt. Lee for some reason did not regard it as a Montego Bay site, and the available material in our collection, even though we do not know how representative it is, does not suggest that either; but reexamination of Osborne's excavated material may tell a different story. The most marked tendency in this case is for the number of incised fillets to increase with time. Vanderwal himself suggested that the "Fairfield complex" had evolved out of the White Marl complex on the north coast.

From our point of view, the value of the Vanderwal diagrams is that they put some kind of quantification upon certain of the tendencies characteristic of the White Marl and Montego Bay styles as already defined in general terms by Howard. Thus, as he said, the White Marl assemblages have characteristic geometric incised designs and extensively decorated lugs and handles, whereas the Montego Bay assemblages have deep heavy incisions on wide rims. Vanderwal's diagrams confirm the importance of these attributes. There are some obvious chronological trends in both cases, and again Vanderwal's diagrams are useful in bringing this out. Because of the differences between the two diagrams, Vanderwal came to the conclusion that in Pre-Columbian Jamaica there was little or no contact between the people living on the north and south coasts, but this conclusion seems to be unwarranted.

In his thesis, Vanderwal did not address the problem of the Jamaican Redware sites. Nonetheless, he carried out excavations at Bottom Bay (M4) in

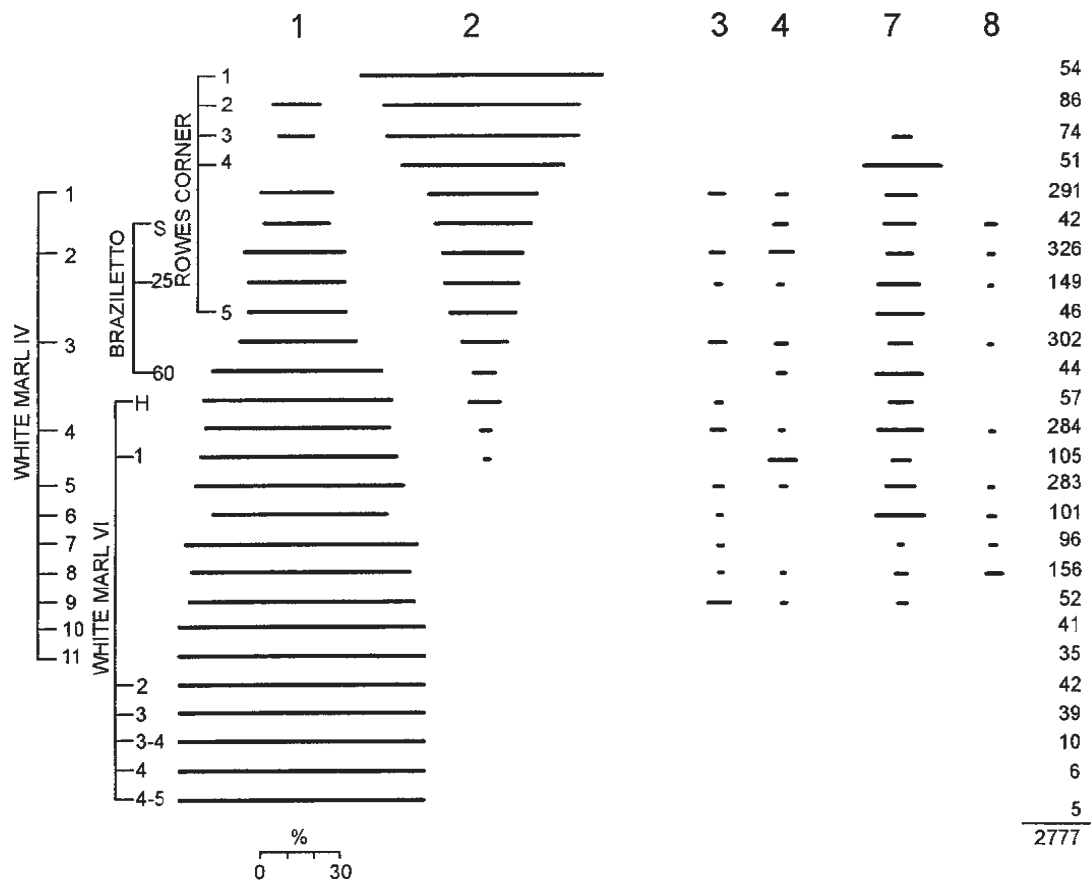


Figure 2. Vanderwal's mode stratification: South Coast. Key to Vanderwal's modes: 1. Plain rims, 2. Filleted rims, 3. Bevelled rims, 4. Alternate-oblique incisions, 5. Incision on fillet, 6. Incision on strip, 7. Serrated lugs, 8. Plain lugs, 9. Other decoration.

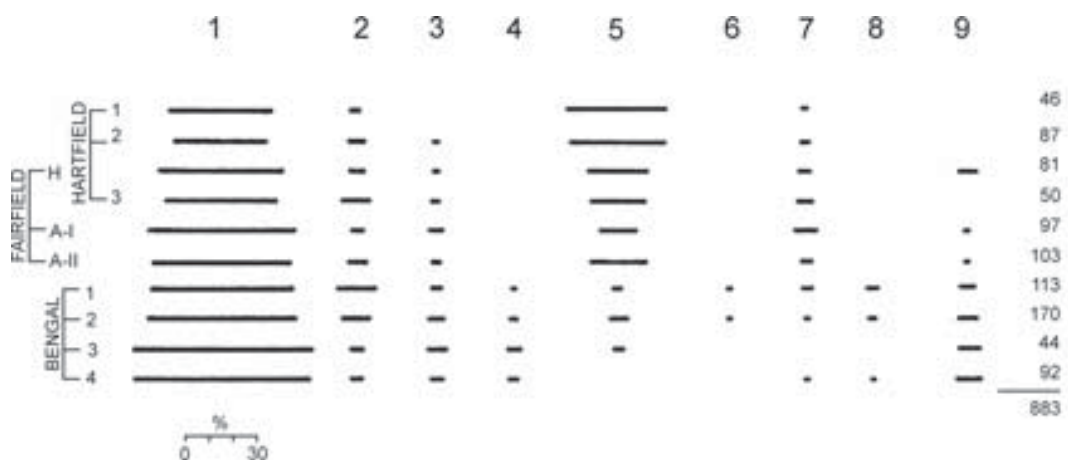


Figure 3. Vanderwal's mode stratification: North Coast. Key to Vanderwal's modes: 1. Plain rims, 2. Filleted rims, 3. Bevelled rims, 4. Alternate-oblique incisions, 5. Incision on fillet, 6. Incision on strip, 7. Serrated lugs, 8. Plain lugs, 9. Other decoration.

Table 1. Sites Excavated by Vanderwal.

Sites	Date	Excavated Area	Maximum Depth	Area in m ²
Belvedere (O1)	1965	portions of the site		
Bottom Bay (M4)	1966	10 5 x 5 ft pits	10 in	23
Hartfield (J1)	1966	3 5 x 5 ft pits	1.5 ft	7
Fairfield (J3)	1966	5 3 x 3 ft pits	3 ft	4
Rio Nuevo (Y4)	1967	4 5 x 6 ft pits, 1 30 x 5 ft trench	3 ft	25
Spanish Wood (O2)	1968	6 pits, 1 15 x 5 ft trench	4 ft	7 (minimum)
Bowden (O9)	1968	15 pits, 4 trenches	1.5 ft	

1966, and recovered a sample of material that he analyzed according to a different set of attributes (Vanderwal 1968a:129–130). He obtained an uncalibrated radiocarbon date of A.D. 650 \pm 120, which until recently has remained the sole age determination for the complex on the island. The first excavations he conducted were in 1965, at Belvedere #1 (O1) in St. Thomas parish. These also did not feature in his analysis, since on this occasion it seems he was solely concerned with the examination of some depressions in the landscape, which he interpreted as a moisture catchment system for the growing of cassava or maize (Vanderwal 1968a:40–43). Subsequent to the writing of his thesis, in 1967 and 1968, he excavated two further sites in St. Thomas parish, Spanish Wood (O2) and Bowden (O9), and one in St. Mary parish, Rio Nuevo (Y4). He never analyzed or published the artifacts from the last three sites, although the fauna from Rio Nuevo was given to Elizabeth Wing and was included as comparative material together with that from Bengal in the report on Howard's excavations at White Marl (Silverberg et al. 1972:18–35). All told therefore it can be seen that while he was present in Jamaica, Vanderwal excavated no less than seven sites, leaving aside White Marl. Some idea of the extent of his operations can be seen from Table 1, compiled from the indications given in his reports.

The total excavated area according to these figures therefore amounts to a minimum of 66 square meters, and that does not include Belvedere, Bowden, and parts of Spanish Wood. It is a formidable total. The pity of it is that this material remains largely or wholly unpublished, although to judge from the

content of the boxes kept at the JNHT it was practically all marked. Vanderwal's whole energies were devoted to the task of analyzing the pottery, therefore other aspects were neglected. No record was kept of the fauna, nor was it handed over for analysis, except in the case of Rio Nuevo. Above all, we have no plans or stratigraphic drawings for any of the sites. As in the case of White Marl, therefore, this looks like another missed opportunity in Jamaican archaeology.

James Lee and His Associates

After the era of Howard and Vanderwal, and partly overlapping with it, came the era of James Lee and his associates. Some of the highlights of this period are as follows. As Lee explained, the "project of mapping all known Arawak sites in Jamaica" began in 1959 (AJ 1978, 4:1–4). The net result is the 265 precisely recorded middens and caves listed here. In addition, Lee made a note of 77 other sites that he did not succeed in locating, 36 mentioned by previous authors such as Duerden, Cundall, and Howard, and 41 known only on the basis of unverified reports. He collected material from 191 of these sites, which is represented in the Lee Collection. He founded the Archaeological Club of Jamaica in 1965, which became the Archaeological Society of Jamaica (ASJ) in 1970. The first had nine founding members, the second 24. This small band grew with time, but it was always a group of enthusiasts. Practically single-handedly, Lee produced and edited the newsletter "Archaeology Jamaica" from 1965 to 1986, and this is an invaluable record of what was achieved in the island at that time. Lee regularly attended the meetings of IACA, and published articles in four volumes of their proceedings (Lee 1980, 1985, 1990; Roobol and Lee 1976). These articles contain some material that was not published in the newsletter. Lee was involved in a number of public events. He was particularly proud of the role played by the ASJ in safeguarding the site of Mountain River Cave (SC1), which he had relocated in 1954. The 2 acres immediately surrounding the site were acquired by the Society in 1976, and in 1980 it was fenced off with the help of the Jamaica Defence Force. The site was handed over to the Jamaican National Trust Commission (the forerunner of the JNHT) in 1982 (AJ 1982, 2:10–13). Then, in 1983, a small gold disk, found the previous year at Bellevue (A45) and the first such artifact to be discovered in the country, was handed over to the Bank of Jamaica by Lee and the owner of the property, Maurice Facey (AJ 1983, 4:33–38) (Appendix 16).

As he emphasized, Lee did not excavate any of the sites. Nonetheless, he was instrumental in locating three particularly important caves, and removing material from four of them, in order to safeguard that material, much as his predecessors had done in Halberstadt and Cambridge Hill. In 1968 he located the site of Bull Savannah #2 (EC12). The finds here included two skulls, as well as other bones, teeth, and pottery, described as having some traits that were “distinctly Redware” in style, although there was no sign of red slip (AJ 1968, 3:1). A cave at Spot Valley (JC7) was reported by David Fletcher in 1970, and much of the material was removed in 1971 (AJ 1970, 4:2; 1971, 2:2). The cave contains pictographs generally similar to those found at Mountain River Cave (Appendix 41). There was a great deal of archaeological material, including at least one complete vessel, and the human remains now in the Lee Collection come from a minimum number of eight different individuals. In 1971 Lee discovered the site of Taylor’s Hut (CC15), which had evidently remained undisturbed since Pre-Columbian times. One intact bowl containing a skull was found in situ (AJ 1971, 4:6) and there were two other skulls, as well as abundant archaeological material. In a situation reminiscent of Halberstadt, some wooden poles were found in the immediate vicinity, and Lee suggested that they had been used to carry dead persons into the cave. After consultation with C. B. Lewis, the material (including 11 complete vessels) was removed from the site in 1973, and now forms part of the Lee Collection. In 1986, Lee located the site of Belle Air (AC4), which again contained abundant material, including four complete vessels and the remains of at least six human skeletons that had been buried in the cave (Lee 1992). Taken together, these finds are no less remarkable than those recovered from the caves in the island in the last years of the nineteenth century.

A number of Lee’s associates did carry out excavations. Father Osborne has already been mentioned in connection with Bengal (A8). In 1974 he also excavated Cinnamon Hill (A13) and this work was fully reported (AJ 1976, 1:1–7). The fauna was studied by K. F. Johnson (AJ 1976, 1:9–18) and the human burial found at the site by F. L. Jaywardene (AJ 1977, 2:1–2). Three radiocarbon age determinations were obtained (AJ 1981, 2:8). Unfortunately, the one on the human burial was not satisfactory, but the other two, uncalibrated, are as follows: A.D. 1015 ± 180 and A.D. 1325 ± 195 . In general, the archaeological material was defined as “White Marl with Montego Bay substyle features.” A plan of the site is at Appendix 25. Apparently, Osborne also carried out some excavations at Retreat (A13) and Iter Boreale (Y14), but these

were never reported. Excavations at Bellevue–Mannings Hill (K13) were carried out in 1974–1975 and 1976–1977 by C. W. Medhurst and John Wilman (AJ 1976, 3:3–12; 1976, 4:12–40; 1977, 1:2–9; 1977, 3:1–9, 12–19) and the same authors continued their work at Rodney’s House (S5) in 1978–1979 (AJ 1978, 3:1–10, 12–24; 1979, 4:1–2; 1983, 3:20–22; 1984, 2:9–11). The results were fully reported. In the southwest portion of the Bellevue site, a circular arrangement of postholes was located, and was convincingly interpreted as a house foundation (Appendix 9). This is the first such feature to be adequately documented in Jamaica. Both excavators remarked that at Rodney’s House fluted rim sherds were confined to the top part of the deposits. This was taken, incorrectly, as an indication that the site had to be older than White Marl. John Wilman’s last excavations were carried out in 1983 and 1986 in the vicinity of his property at Upton (A43) (AJ 1983, 3:20–22; 1984, 2:9–11; Wilman 1992–1993).

Captain C. S. Cotter was mainly concerned with the first Spanish capital at New Seville (Cotter 1948, 1956, 1970) although he also excavated at Windsor (A19) not far from where de Wolf put down her sounding (Cotter 1952). Lt. Comm. J. S. Tyndale-Biscoe was involved with a number of sites on the island, including the University Midden (Long Mountain North) (K8), but he did not report in detail on any of them (Tyndale-Biscoe 1952, 1954). Perhaps his most interesting contribution relates to Bowden (O9), which he first discovered and described (Tyndale-Biscoe 1960a, 1960b, 1962). He called it “an Arawak kitchen midden with an individuality all its own,” on account of the style of its pottery decoration. This he described as having been made with a “square-pointed stick,” to produce either a single line of punctations or a zig-zag pattern. In his view, one could speak of a “Port Morant style” on a par with the Montego Bay style, and the material available in the Lee Collection tends to bear this out. It was because of Tyndale-Biscoe’s description (with which he agreed) that Vanderwal conducted his excavations at Bowden in 1968, although, as we have seen, he did not publish the results.

Finally, it should be mentioned that R. P. and A. K. Bullen carried out excavations at Tower Hill (K7) in 1961 (Bullen and Bullen 1974), and excavations were also conducted at Bellevue–White River (A45) by J. P. Dering, J. K. Southerland, and J. E. Fandrich in 1991 (Dering 1992; Dering and Southerland 1991). Dering thought the remains showed “the social isolation of a marginal horticultural village,” but it is uncertain how far this agrees with Lee’s discovery of a gold disk at the same location.

Recent Developments

There have been a number of developments on the island since Lee retired in 1986, especially concerning five “new” sites, which have been given arbitrary designations in terms of the Lee system, as follows: Aboukir (AC5), Pottoo Hole (CC22), Nanny Town (P5), Paradise Park (W13), and New Seville (A51). These sites are included in the CD-ROM, but not in the fuller descriptive List (Appendix A) at the end of this work, therefore more detail is given about them here. Apart from the “new” sites, extensive excavations have also been conducted over the last few years at five already known “old” sites in St. Mary parish, as follows: Green Castle (Y25), Newry (Y27), Coleraine (Y19), Wentworth (Y8), and Rio Nuevo (Y4). These sites are included both in the CD-ROM and in the List (Appendix A) at the end of this work, but information concerning them will be briefly summarized here as well.

The first of the “new” sites is Aboukir, in St. Ann parish. Three carved wooden figures, fully comparable to those found 200 years earlier at Carpenter’s Mountain (Aarons 1994; Saunders and Gray 1996), are said to have come from a small rockshelter in this vicinity. They were originally discovered in the 1940s and twice removed from the cave, the second time by Leonard Clayton, who presented them to the JNHT in 1992. They are now on display in the National Gallery in Kingston. The rockshelter is said to be 13 m² in area and to have a maximum height of 2.5 m. In 1992 “two small test pits” were dug inside the cave by a JNHT team, but are said to have produced only “rodent and lizard bones and quartz crystals.” All authorities who have examined the artifacts are convinced on stylistic grounds that they are genuine Taíno images. In detail the three pieces can be described as follows:

- (1) A carved male figure (Aarons 1994:12; Saunders and Gray 1996:Figures 1 and 2) (Appendix 48), 168.4 cm in height with a maximum width of 28 cm. Made of mahogany (*Swietenia* spp.), probably West Indian mahogany (*Swietenia mahogoni*). The lower section of the figure, slightly less than half the length, is a tapered shaft with a rounded end. There is a projection at the top of the head, and it has been suggested that this might have supported a table or “canopy,” as in the case of the second figure. In that case, the shaft may have been driven into the ground and served as a support, replacing the circular base upon which such figures normally stand. According to Saunders and Gray, the form of the bent legs suggests the pres-

ence of ligatures; the figure has “prominent male genitals, and thin arms with hands reclining on the chest”; features considered characteristic of Taíno representations of Baibrama, the deity identified with the cultivation and consumption of cassava. The eye sockets, ears, and mouth would probably originally have held inlay, possibly shell or conceivably gold (cf. Bellevue–White River, A45).

- (2) A bird figure with circular table (Aarons 1994:13; Saunders and Gray 1996:Figures 3 and 4) (Appendix 49), 61 cm in height with a maximum width of 28 cm. Wood identified as *lignum vitae* (*Guaiacum* spp.). The bird is thought possibly to be a pelican. Since the “canopy” in this case is quite unmistakable, it is likely that this was a table for use in the ceremony of sniffing *cohoba*, a powder made from the ground seeds of *Anadenanthera peregrina* (Saunders and Gray 1996:807, note 2).
- (3) A spoon or scoop with an anthropomorphic handle (Aarons 1994:13; Saunders and Gray 1996:Figures 6 and 7) (Appendix 50). Seems to be partly damaged at the base. 15.9 cm in height and 7.7 cm in maximum width. Wood identified as *lignum vitae* (*Guaiacum* spp.). The eyes, mouth, and ears of the human-headed handle may again have been inlaid. According to Saunders and Gray, the features are reminiscent of Maquetaurie Guayaba, the Taíno lord of the underworld. The scoop will again have been used in connection with a *cohoba* sniffing ritual, hence all three artifacts found in this cave may well have been related to this practice.

The first two pieces have radiocarbon age determinations, their uncalibrated dates being 670 ± 40 B.P. (Beta-153380) and 820 ± 40 B.P. (Beta-153379) respectively (Manuels 2001).

In 1993 an “Arawak Gallery” with pictographs comparable to those from Mountain River Cave was discovered at Potoo Hole, part of the Jackson’s Bay cave complex (Fincham 1997; Fincham and Fincham 1998). The “Arawak Gallery” lies immediately below entrance #1, at the eastern end of an extensive cave system, northwest of Jackson’s Bay “old cave” or “water cave” (CC2). The pictographs occur on a rock face at the base of the vertical pit entrance, which is 20 m deep. They are therefore in “the dark of the cave.” Today access is achieved only by the use of specialized caving equipment. It is speculated that the Potoo Hole painter will have undertaken the hazardous scramble down by making use of hanging lianas. A preliminary analysis has revealed the presence of at least 46 pictographs: 18 zoomorphic, seven anthropomorphic, eight geo-

metric, and 13 undefined. The zoomorphic images include probable turtles, crocodiles, iguanas, and fish. For the most part, the pictographs were executed in a red ocher and/or blackish pigment (possibly charcoal based). “Surface fossil guano” from the cave has been radiocarbon dated to 950 ± 50 B.P., but it is not known exactly what relationship this material bears to the pictographs.

Then, significant excavations have been carried out, in 1991–1993 at Nanny Town by Kofi Agorsah, and at Paradise Park in Westmoreland in 1998–2002 by Professor William Keegan.

Five principal excavation areas in Old Nanny Town were demarcated north of a loop in the Stony River (Agorsah 1994:Figures 11.3 and 11.4). According to Agorsah, “three phases of occupation” could be distinguished, although he also refers to “two” such phases (Agorsah 1994:181 and 180 respectively). The three phases are shown schematically by Callum, who has reexamined the record of the excavation (Callum 2001:Figure 2B, a Harris Matrix constructed on the basis of Agorsah’s account). Using Callum’s terminology, the three phases are as follows:

- (1) “Pre-maroon,” an “independent Amerindian activity area,” represented in unit 5b. According to Agorsah, “the lower level appears to have a combination of two different cultural features which . . . do not appear to represent one cultural entity. The terracotta figurines and the associated local thin but highly fired earthenware at the bottom of the lower cultural level appear . . . to be typically Amerindian. This level changes as one comes up toward the upper level, into a combination of poorly fired ceramics mixed with imported European material. The top sections of the lower cultural level, however, are completely devoid of any such material that can be referred to as Amerindian.” The meaning of this is not entirely clear. The terra-cotta figurines certainly look Amerindian (Agorsah 1994:Lower Figure on p. 179) and one of them (now housed in the Archaeology Laboratory at the University of the West Indies [UWI]) is shown at Appendix 47. “Typically Amerindian” material is said to occur at the base of the sequence, but it is also said to have completely disappeared by the time the “top” of this level is reached. So what can be its relationship to the “poorly fired ceramics mixed with imported European material,” which are also said to be present, as a different entity, in the “upper” part of this level?
- (2) The “Maroon level” or “phase” occupying the period from 1655 to 1734, containing among other things a Spanish coin (pieces of eight) dated to

- 1668 (Agorsah 1994:Figure on p. 180). It is not clear whether phases (2) and (1) should be combined, in the event that the sequence at the site is to be interpreted in terms of two, rather than three, periods.
- (3) The “top cultural level,” dated 1734–1735, corresponding to the occupation of Old Nanny Town by British colonial forces at that time (Agorsah 1994:Figure on p. 174).

In sum, the existence of an Arawak “independent” horizon at the base of the sequence is attested to by some elements of material culture, especially the terra-cotta figurines (which in the Pre-Columbian context would normally be referred to as *adornos*). As such it can be compared with other inland Arawak sites. Its prolongation beyond 1655, and its coexistence with the Maroons, is clearly more questionable, at least until the finds and their contexts are more fully published.

Excavations have been conducted at Paradise Park, a private estate immediately east of Savanna-la-Mar and north of Bluefields Bay, by Keegan. Following an initial investigation by Roderick Ebanks, Keegan was invited to undertake further work at the site by the landowners, the late Tony Clarke and his son “Busha” Clarke (Carlson and Keegan 2004; Keegan 2002). In fact, it turns out that there are two settlements east of the Deans Valley River, one described as Ostionan (Redware) and the other as Meillacan. The Meillacan site was originally referred to as comparable to White Marl, but it is now said to have indications of the Montego Bay style. The Ostionan site is to the east, has been named Paradise, and (in accordance with JNHT requirements) has been given the code name Wes-15a. The Meillacan site is to the west, has been named Sweetwater, and has the code name Wes-15b. The first is dated to 1180 ± 60 B.P. (Beta-125832) and the second to 490 ± 60 B.P. (Beta-125833). The calibrated equivalents as published at two standard deviations (Keegan et al. 2003) are A.D. 710–990 and A.D. 1320–1490 respectively. The sizes of the sites are about 400 and 220 m long by about 60–100 m wide. Both have their long axes parallel to the shoreline and are on a low dune ridge about 1 to 1.5 m above current mean sea level. A swamp and another dune ridge separates them from the coast. The second dune seems to reflect accretion in the past 500 years, after the sites were abandoned. The depth of deposit in both cases usually does not exceed 50 cm. About 240 m of sterile sand divides the two sites, and for this reason, as well as the divergent dates, Keegan concludes that they are entirely separate, representing two distinct cultures that existed at two different times. The differences in ceramic styles are paralleled by differences in paste

characteristics, which serve to emphasize the distinctions between the two. A more abundant chert industry, with more flaked stone tools, has been found at the Ostionan site (Paradise) than at the Meillacan (Sweetwater). Moreover, the types of chert selected for use at the two sites are different, even though the source for both is the same—river cobbles.

In addition, the available molluscan and vertebrate faunal evidence serves to contrast the two sites. Conchs (different varieties of *Strombus*) were dominant in the Redware site, whereas marine bivalves, particularly clams belonging to the Lucinidae family (*Codakia orbicularis* and *Lucina pectinata*), were prevalent in the Montego Bay settlement. In Keegan's view, these changes reflected not only human preferences but also altered environmental conditions, with a switch from free-circulating marine systems of high salinity to lower salinity habitats that are often associated with mangroves (Keegan et al. 2003). These changes may correlate with a 1 m rise in sea level over the period in question.

The changes in vertebrate fauna between the two sites are also quite dramatic (Carlson and Keegan 2004:Table 4.2). In terms of minimum number of individuals (MNI), fish are dominant in both cases (70 vs. 89 percent), and there is evidence that fishing intensified over time, with more than double the variety of fish at the Meillacan than at the Ostionan site. But in other respects the Ostionan site was far more varied, with sea- and freshwater turtles (11 and 5.3 percent) and Jamaican iguana as well (5.3 percent). It is considered that overexploitation could have caused the disappearance of these species in the later settlement. If so, the story would fit in with a wider tendency in the Caribbean at large for "resource depletion" to occur when indigenous people first moved into a new hitherto pristine environment. As the authors say, "native peoples had a dramatic and irreversible impact on the terrestrial and marine animals they encountered" (Carlson and Keegan 2004:85).

Also under the heading of "new" sites is New Seville. As mentioned above, this was first investigated by Captain Cotter. It was not included by Lee in his mapped Arawak locations because, no doubt, he regarded it as a purely Spanish creation. It appears, however, that it does form an important part of the story. Robyn Woodward restudied Cotter's excavated material as part of a master's thesis, which she completed in 1988, the conclusions of which she has subsequently further revised (Woodward 1988, 2006), and it is thanks to this work that we now have a different view of the site.

New Seville was the first capital of Spanish Jamaica between 1509 and 1534 (Woodward 1988:Figure 1) (Appendix 51). Remains were observed, in an increasing state of disrepair, by Sir Hans Sloane in 1688, the Duke of Portland in

1723, and Edward Long in 1774, but archaeological work did not begin until 1937, when the estate manager's horse stumbled upon a well that turned out to be within the walls of the former Spanish governor's castle or fort (Woodward 1988:Figure 4) (Appendix 52). Captain Cotter and Geraint Casserly, the estate manager, removed several items from the well including at least three pieces of elaborately carved stonework. Subsequently, Casserly "cleared the earth from the vicinity south of the well," and "within a few yards" of it "lying in no particular order" were found the remainder of the carved stones that are now at the Institute of Jamaica (Cotter 1948, 1956, 1970). The stone is apparently local, and it has been speculated that the work was carried out "by Arawaks working with a Spanish craftsman" (Wynter 1988). The Spanish art historian Diego Angulo Iñiguez visited the site in 1942 and, following him, Cotter suggested that these "beautifully carved pilasters or columns" were executed in a style known as "Renaissance grotesque" (cf. Curtin 1994). Cotter added, however, that there was "a definite local influence," and he drew attention in particular to a doorjamb with "two female figures" that he took to be Amerindian (Cotter 1948:Figure 1). Whether or not this is so, there is other evidence to show that "the indigenous Taíno were present at the site throughout its occupation," and that there was a significant degree of interaction between them and the Spaniards (Woodward 2006).

This evidence above all consists of the ceramics recovered from the site, particularly the castle or fort (Woodward 1988:Figure 44) (Appendix 53). This material was recovered by Cotter during excavations between 1953 and 1968, when according to him he found 1,742 Spanish ceramics and 1,486 "Indian pottery sherds" (Cotter 1970). According to Woodward's subsequent analysis of the finds, there were 2,458 European ceramic pieces, and 1,797 that could be classified as Arawak (Woodward 1988). In general these belonged to the Meillacan or White Marl tradition. But in addition she identified 32 sherds and seven vessels that she regarded as "syncretic Hispanic-Indian ware," first christened "St. Ann's Bay" and later "New Seville" ware (Woodward 2006). These products "combined Old World ceramic forms with New World ceramic technology," the assumption being that Taíno artisans were put to work to produce some vessels that corresponded to Spanish tastes. Thus, six base sherds from small bowls either have attached foot rings or show evidence of where such rings have been sheared off (Woodward 1988:Figure 38) (Appendix 54). There are two rims of small jars or pitchers that would have had handles not in the usual Taíno style (Woodward 1988:Figure 39a), and a "pedestal cup" (Woodward 1988:Figure 39b) (Appendix 55). There is one complete handled

jug with a foot ring (Woodward 1988:Figure 40c), one other cup, and a spout (Woodward 1988:Figures 40a and b) (Appendix 56). As Woodward says, all these are “tablewares,” which would have been employed in the “highly visible arena of dining.” The Arawak ceramics that were not of the syncretic variety would have been used for utilitarian purposes, essentially food preparation in the kitchen. In either case, it is fairly obvious that Taíno women were being employed as part of the household, in a subservient capacity. The presence of 16 griddle fragments suggests that cassava bread was being prepared as part of the diet, in the absence of the wheat the Spaniards would no doubt have preferred. Woodward concludes that the Taíno women may have been able “to maintain a small degree of cultural autonomy within a totally Hispanic setting” (Woodward 2006), and they may well still have been there when the Spaniards left the site. So far, though, this is the unique case of “Hispanic-Indian” coexistence recorded archaeologically on the island, no such evidence having yet come to light at the second Spanish capital, Villa de la Vega (Mathewson 1972a, 1972b).

It may be pointed out that in the wider Caribbean context there are further archaeologically documented examples of contact between the Spaniards and the indigenous inhabitants. Deagan has drawn attention to this in relation to Puerto Real in Hispaniola, which was built and occupied by the Spaniards between 1503 and 1578 (Deagan 1996). The majority of the cooking pots excavated at this town and belonging to the first phase of its occupation were locally made, hand-built, and non-European in style and manufacture. There are also indications that foods favored by the Taíno (such as fish, turtles, and cassava) were being consumed, in addition to the beef that came from Spanish ranching activities. Deagan has no doubt that all this was due to the “presence of Indian women in Spanish households as wives and servants.” This moment in time may have been comparatively brief, since as Deagan points out, it was preceded and followed by something quite different. At La Isabela, the first Spanish town in the New World, built and occupied between 1493 and 1498, it seems that the Spaniards did make some pottery themselves but it was exclusively Iberian in style (Deagan 1996:Figure 6). Their attempt to maintain an existence apparently independent of their surroundings did not succeed, and La Isabela was soon abandoned. At Puerto Real, after about 1550, Taíno wares were replaced by African-influenced cooking vessels (Deagan 1996:Figure 9), which themselves reflect radical demographic changes. Short-lived episode or not, it was significant, a witness to “domestic accommodations” between Spanish men and Taíno women that in Deagan’s view can be said to have laid the foundations for a distinctive “criollo-ladino” identity, still not without influence today.

Back in Jamaica, Woodward has ongoing excavations at New Seville, which have produced and no doubt will still produce further surprises. She has re-investigated the Spanish sugar mill previously excavated by Cotter, and by López (1982, 1986), and has demonstrated that this was driven by water and not by animal traction. In the process, she discovered the workshop where the carved stones were created, and these are now being studied.

Also ongoing have been excavations in the Annotto Bay area conducted by a joint team from the University of the West Indies and Murray State University (Allsworth-Jones and Wesler 2003). The site of Green Castle (Y25) was investigated between 1999 and 2001. The scope of the investigation was then widened to include more sites, such as Newry (Y27) and Coleraine (Y19), and Wentworth (Y8) farther to the west, in 2002–2003. Details concerning this work are provided in the list of excavated sites. All the sites produced radio-carbon dates, which are summarized in Tables 6 and 7 and Figure 27 in Chapter 7. Broadly speaking, the range of dates corresponds to that from White Marl, which is not surprising, since the archaeological material also belongs essentially in that category. Two human burials were discovered at Green Castle, one an adult, the other a child, and for once these burials were examined professionally in situ by a physical anthropologist, Ana Luisa Santos. Fragmentary human remains were also found at Coleraine, belonging to a minimum of two individuals, one an adult, the other a juvenile. Except for the first year at Green Castle, the abundant faunal remains were studied by Lisabeth Carlson, who commented on their excellent state of preservation. Green Castle produced almost 21,000 individual specimens, which as Carlson says, represents “the largest analysed faunal sample from Jamaica to date” (Carlson 2002:6). The other sites produced a further 13,000 specimens. The inhabitants of the sites were primarily fisher folk, but terrestrial resources were not neglected either, particularly the *hutía*. The study of the *hutía* remains has contributed to the debate about whether these animals were in some way managed, if not domesticated, by the Taíno. In general, the investigations at the sites have been intentionally interdisciplinary, as well as educational, since students from the University of the West Indies have been involved in the work every year.

Finally, mention should be made of a study of the area between the White and Rio Nuevo rivers by Jo Stokes, which may reveal what Lee’s survey missed, that is, the smaller settlements that undoubtedly surrounded the larger ones, which form the heart of his map. So far as Rio Nuevo (Y4) is concerned, Stokes has taken up where Vanderwal left off, and among other things has shown that at this site (as at White Marl but so far nowhere else) layers of marl were delib-

erately laid down “to cover existing refuse piles” (Stokes 2002). This discovery and others indicate clearly how much remains to be found out about Jamaican Pre-Columbian archaeology.

Conclusion

Looking back on the story as a whole, it is plain that Jamaica lacks neither interesting sites nor archaeological material equal to that found elsewhere in the Greater Antilles. Over the years many people have shown great dedication in unearthing the prehistoric past of the island. What has been lacking above all has been the practice of carefully recording what has been found in the field, making plans and stratigraphic sections, and fully publishing the results. It will be up to the future to remedy this defect.

3 / General Frameworks for Caribbean Prehistory

The Chronological System of Irving Rouse

The work done in Jamaica cannot be considered in isolation from that done elsewhere in the Caribbean, and indeed it has been taken for granted by all authors that Jamaica fits into a larger scheme of things, the outlines of which for the most part have been determined elsewhere. When considering what the general frameworks are, it is impossible not to begin with the late Irving Rouse, former professor of anthropology at Yale University, who has exercised a huge influence in the region since he started his career in the 1930s. Seven of his works are listed in this volume in References Cited, as well as one joint work, spanning the period from 1948 to 1992. These do not represent the whole of his output, but they do provide an adequate guide to what he has been saying over the years. In addition, Peter Siegel interviewed Rouse for *Current Anthropology* in 1993 and his reflections on his career provide a further insight into his main ideas (Siegel 1996).

A starting point might be provided by the two Figures here, 4 and 5, which are adapted from Rouse's final book *The Tainos* (1992:Figures 10 and 14). Figure 5 shows what he called the "chronology of the peoples and cultures in the Bahamian Archipelago and the Greater Antilles" going back to 4000 B.C., and Figure 4 shows the "advance of the Ceramic/Archaic-age frontier through the Caribbean" in the period from 2000 B.C. to A.D. 1500. The "end of the Archaic Age and the beginning of the Ceramic age" frontier is shown as a thick black line in Figure 5, so there is a link between the two. The diagram shows

time on the vertical axis and space on the horizontal axis; hence, all the named boxes have a defined position in time and space. Such “charts,” as he called them, have been produced by Rouse over many years. This diagram, for example, may be compared with the one he produced for *Science* in 1964 (Rouse 1964:Figure 5) and the one he and Clark Moore presented to IACA in 1983 (Rouse and Moore 1985:Figure 3). There are differences of detail, in regard to geography and the naming of the boxes, but the basic principles lying behind the construction of these charts have remained the same. It is a carefully worked out system, an elaborate one, the rationale for which has been explicitly articulated. But it contains a number of assumptions, which certainly may not be immediately apparent to the nonarchaeologist or to the nonspecialist. In order to understand these diagrams, it is necessary to explain what these assumptions are.

First, what is the starting point or the essential purpose of these diagrams? As Rouse explained, “I form styles or complexes of pottery and other artifacts, each of which is indicative of a single people and culture, and plot their distribution on chronological charts in order to determine their limits in time as well as space” (1990:59). Although Rouse mentions other artifacts, he gave preeminence to pottery throughout. As he said, “Pottery provides the key to Caribbean prehistory” (1965:88). The study of this pottery is by no means self-evident. The layman (or the museum curator) may think in terms of complete vessels. If such exist, in Rouse’s system, one is entitled to speak of a pottery “type” (1992:182). Such types may be very useful in defining the “styles or complexes of pottery” referred to above. As for peoples and cultures, these were for Rouse “two sides of a coin, one consisting of a local population group and the other of the cultural traits that define the group” (1992:182). But for the most part, archaeologists are not dealing with complete vessels, rather with bits of pots or potsherds, and this provides the key to Rouse’s analytical system. He said, “A given artifact can exemplify only one type but it will ordinarily exemplify several different modes” (1965:92). Thus, a sherd might have a certain “mode of rim profile” and that rim might have a certain “mode of design.” So, “Types are, in effect, combinations of modes” (1965:94). For Rouse the mode is the smallest unit of analysis, which in his interview with Peter Siegel he compared to a phoneme in linguistics, but it is also the most vital, since “modes are the basis for studying ceramic change” (Siegel 1996:686). As we have seen, Vanderwal (1968a) similarly analyzed the potsherds at his disposal in Jamaica in terms of separate attributes (which combined constituted modes as he used the word), and this study also proceeds by way of the study of attributes, so to

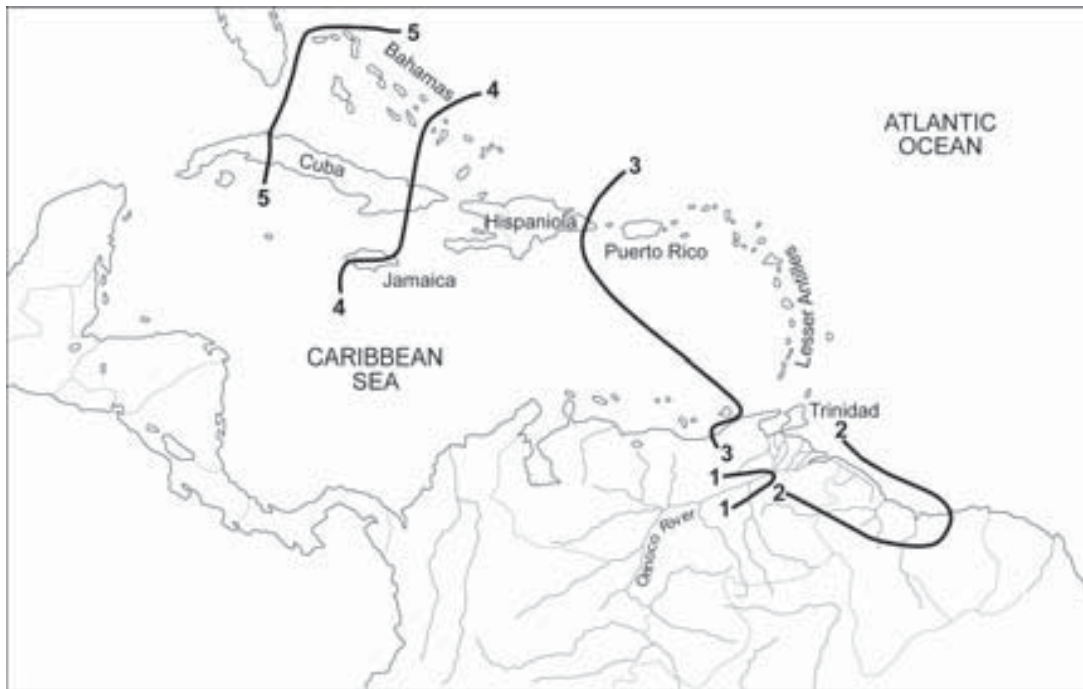


Figure 4. Advance of the Ceramic/Archaic-age frontier through the Caribbean (adapted from Rouse, 1992). Frontier 1: 2000–1000 B.C., Frontier 2: 1000–200 B.C., Frontier 3: 200 B.C.–A.D. 600, Frontier 4: A.D. 600–1000, Frontier 5: A.D. 1000–1500.

that extent Rouse's approach may be regarded as unexceptional or even inevitable, since in the Caribbean the pottery does tend to be quite complex.

Once "styles or complexes" have been defined, how does the system go on from there? The next step, according to Rouse, is the formation of "series." These he consistently defined as "lines of development" (1964:503; 1992:31) "that are known to have descended from a common ancestor" (1992:183–184). Originally, as he put it, each complex or style was named after a type site. "Each series is similarly named after a typical complex or style, by addition of the suffix *-oid* to the name of the complex or style." Thus the style found at Barrancas, on the South American mainland, took the name of that locality, "and this style is assigned to the Barrancoid series, so called because the Barrancas style is the type member of the series" (1964:503). Again, except for the use of *-oid*, this procedure might not seem so unusual in the context of archaeology as a whole, where eponymous sites commonly give their names to "cultures" or "technocomplexes," even in the Paleolithic, where, for example, Aurignac gave its name to the Aurignacian, a name that has endured for over a hundred years. But in his later writings, following the lead of the late Gary Vescelius, Rouse complicated his scheme further by transforming it from

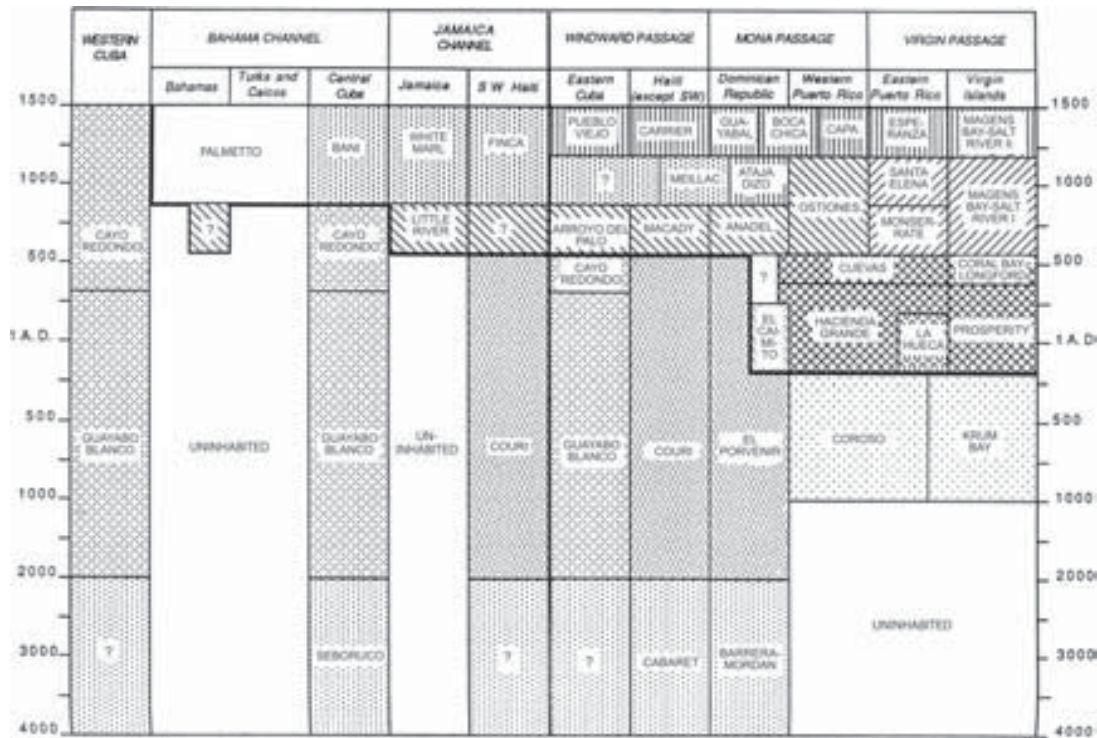


Figure 5. Chronology of the peoples and cultures in the Bahamian Archipelago and the Greater Antilles (adapted from Rouse, 1992). *Key as shown.*



what he termed his “old single-level system of classifying peoples and cultures” into a new “bi-level system” (1992:127). In other words, the classification becomes hierarchical, and the notion of subseries as well as series is introduced (1990:59, 1991:684). “The ceramic styles, and the peoples and cultures they define, are grouped into subseries, whose names end in the suffix *-an*, and series, whose names end in the suffix *-oid*.” Thus the Cedrosan Saladoid subseries and series (named after Cedros and Saladero respectively) marked the “first wave” of Ceramic Age advance through the Caribbean. It is this system that appears in the key to Figure 5 (and did not appear in 1964 and 1985). Such a double system does not appear to have a parallel in archaeological usage elsewhere. In either case, single or double, the implied meaning of the “lines of development” is that of local evolution (with a “common ancestor”) rather than immigration or replacement. Rouse consistently championed this interpretation

throughout his career. Following the Preceramic settlement of the Caribbean, “only the Cedrosan Saladoid peoples actually came from the mainland; all the others developed in the islands” (1992:103). Rouse returned to this theme in his interview with Peter Siegel, stating that his efforts had been largely devoted to counteracting “the assumption that everything had to come in from outside” (Siegel 1996:682).

Turning to the specifics of Figures 4 and 5, we may note certain features that impact upon Jamaica. The Preceramic period, divided by Rouse into Lithic (with flaked stone artifacts) and Archaic (with ground stone artifacts), and supposedly representing nonagricultural hunter-gatherers, is not represented in the island. The line marking the boundary between the end of the Archaic Age and the beginning of the Ceramic Age in Figure 5 has, as Rouse says, a number of “jogs” in it, indicating successive frontiers, “where first the Saladoid and then the Ostionoid peoples” halted for a while (1992:34). The two principal “jogs” correspond to frontiers 3 and 4 in Figure 4, dated respectively to 200 B.C.–A.D. 600 and A.D. 600–1000. The two principal “complexes or styles” represented in Jamaica are Little River and White Marl, corresponding respectively to the Ostionan Ostionoid and the Meillacan Ostionoid subseries and series. The appositeness of the comparison in terms of material culture can be judged by the illustrations and descriptions in Rouse’s *Science* article (1964:Figure 12, Pottery of Ostiones, type site of the Ostionoid series, Puerto Rico, and Figure 14, Pottery of Meillac, type site of the Meillacoid series, Haiti). As Rouse says, the Ostionoid series is characterized by “a smooth finish, more-or-less straight-sided or incurving-sided bowls, plain tabular lugs, and simple red painting”; whereas the “Meillacoid potters broke with the tradition of smooth surfaces and developed a new set of techniques which roughened the surfaces: appliqué work, both on lugs and on vessel walls; punctuation; and incision, done in such a way that the edges of the grooves are jagged” (1964:509).

In Rouse’s view, the Meillacan developed out of the Ostionan in the Cibao valley of Hispaniola (1992:96–97, 102–103). The map in Figure 4 is curiously mistaken however in suggesting that the Ostionan occupation was confined to the south coast of Jamaica and that the Meillacan occupation only later spread to the north, particularly in view of the fact that the eponymous Little River site itself is actually on the north coast (1992:95–96). Interestingly enough, Rouse and Moore proposed that there was a “close cultural resemblance” between the White Marl style and the “Finca style” that they identified in southwestern Haiti, the Guacayarima peninsula (Rouse and Moore 1985:Figure 4). Rouse proposed that the two formed a single Jamaica Channel area, analogous

to others he had distinguished elsewhere in the Greater Antilles: the Windward Passage area, the Mona Passage area, and the Vieques Sound area (Rouse and Moore 1985:Figure 5). As he said, “the remains on either side of each passage resemble each other more than they do the remains elsewhere on the same islands” (1991:684). Thus, the geographical areas listed along the top of Figure 5 reflect these passages, and not the individual islands, as had hitherto been the case (1964:Figure 5).

There is one additional curious point about the nomenclature used at times for the prehistoric occupation of Jamaica. In 1948 and later, Rouse referred to the then inhabitants of the island as “sub-Taíno.” This was intended to convey the idea that they were “not as highly developed culturally” as their contemporaries in Hispaniola. By this it was meant that they lacked “ball courts, wooden stools, elaborate stone zemis, and petroglyphs” (1948:521, 543). Since three out of four of these items have in fact been found in Jamaica, it might be considered that the term was inappropriate from the start. Nonetheless, as we have seen, it may have contributed to Howard’s strange dismissal of the archaeology of Jamaica as “possessing only limited interest in itself” (Howard 1950:175). Subsequently, Rouse employed the no doubt more appropriate term Western Taíno for the inhabitants of the island, and this is how they appear in his final work (1992:Figure 3). Nonetheless, they are still regarded as being at a less advanced level than their peers in Hispaniola, since the latter are said to have reached the Formative stage (with the first public monuments), whereas the former were still at the Ceramic stage (with pottery and agriculture only) (1992:33 and Figure 8). The inhabitants of Hispaniola therefore form the core of what are referred to as the Classic Taíno, and it is they who are said to have had the most advanced form of chiefdom society by the time of Columbus’s arrival (Wilson 1990b:Figures 2 and 8). The situation in Jamaica is much less well known. According to Rouse, “It has been established that there were 8 or 10 chiefs on the whole island, at the time of historic contact, but the names of only two along the north-eastern coast have survived: Ameyro and Huareo” (1948:543–544). According to a very brief note by John R. Swanton, there were eight “Indian Tribes of Jamaica” (1952:611), which he lists as follows (proceeding round the island clockwise from the northwest): Aguacadiba, Huareo, Guayguata, Ameyro, Maynoa, Yaguabo, Añaya, and Oristan. This list cannot be regarded as satisfactory, since it seemingly combines or confuses the names of places and persons, and it is not clear what his sources are, but there is unquestionably a useful field here for future research.

How can one attempt to sum up the Rouse scheme as a whole? It is what

would be referred to as a classic “culture-historical” model, of a rather rigid kind, based on pottery typology, unchanged in its essentials for 50 years. As such, it has acquired the characteristics of a dogma, and has been presented as such. All around in the world of archaeology there has been change, but it has not changed. Rouse himself was well aware of this. As he rather disarmingly proclaimed in his last book *The Tainos*, “My generation of archaeologists was trained to proceed solely in terms of artifacts and the cultures to which they belonged” (1992:69). He also took into consideration “the peoples who possessed the cultures,” but otherwise he saw no reason to change his ways. As he confessed to Siegel, he had always been drawn toward taxonomy rather than ecology, and he was never really interested in the excavation of archaeological sites either (Siegel 1996:671–672, 686). That left the “accumulation of a succession of chronological charts” as what he considered to be his principal contribution to archaeology over the years. Since he also confessed to being a “normative” archaeologist, with an “inductive” strategy, it was scarcely surprising that, as he said himself, he became “a whipping boy of the New Archaeologists” of the 1960s and after (Siegel 1996:677–678). To his credit, Rouse refused to be fazed by all of this, but nonetheless it is clear why some now feel that it is time to start again in the West Indies.

Alternatives to Rouse’s Scheme

From time to time, some authors have expressed discontent regarding aspects of the Rouse system, and others have voiced dissatisfaction with the entire framework, but in a general way without really proposing an alternative. Thus, following his excavations in Cuba, particularly at Levisa, J. K. Kozłowski proposed the creation of a Paleo-Indian (Preceramic) “Seboruco-Mordán culture” based on “the typological and technological analysis of stone industries” (Kozłowski 1975; 1980). His study differed, as he said, in its methods and results, “above all, because it has been written from the standpoint of the Old World,” that is, traditional European Paleolithic archaeology. He got no thanks for this, because, as A. Gus Pantel put it (in Sued-Badillo 2003:122), “his application of European continental typologies on the West Indian assemblages has resulted in a stereotyping of the early inhabitants of the islands.” Veloz Maggiolo (1979) by contrast emphasized the importance of the environment, and demonstrated that there was no automatic correlation between types of ceramics and settlement patterns, the latter by implication being much more significant. Thus the “drastic change” from Ostionoid to Meillacoid in the Cibao val-

ley of Hispaniola (which Maggiolo agrees did take place) was essentially “the product of socio-economic development,” in which the exploitation of the freshwater turtle may have played a special role (Veloz Maggiolo 1979:55–56). Without naming names, but surely with Rouse in mind, the editor of Volume 1 of the UNESCO *General History of the Caribbean*, J. Sued-Badillo, complained that archaeologists had “failed to articulate regionally intelligible nomenclatures.” The “identities” that have been created, such as Saladoid and Ostionoid, since they are derived from pottery, in his opinion are “dehumanized.” “They conflict with the historical documentation and even with common sense” (Sued-Badillo 2003:3, 259). In that vein, P. Hulme, reviewing a book by F. Moscoso, one of the contributors to the UNESCO volume, had already voiced the claim that the “lengthy dominance of the Yale account” had “stultified Caribbean studies” (Hulme 1988).

L. A. Curet, in his summary of the situation (2004), agreed that, in part because of the dominance of the Rouse scheme, the Caribbean had become “one of the backwaters of modern archaeology.” It had, for example, virtually missed out on the discussion of island archaeology as such that occupied archaeologists in other areas in the 1970s and 1980s. He specifically did not suggest that Rouse’s chronological model should be “completely discarded,” but he emphasized its limitations when dealing with issues “other than migration and cultural sequences.” There were other levels of analysis that needed to be taken into account, such as individuals, households, kinship groups, and communities. The scheme could not deal with that, nor was Rouse’s assumption that his units were necessarily homogeneous at all justified. Above all (as the New Archaeologists would certainly have said) his classificatory system had “no explanatory potential.”

By far the most sustained attack on Rouse’s scheme has however been mounted by W. F. Keegan. The first phase of this attack was contained in three review articles on “West Indian Archaeology” published in the *Journal of Archaeological Research* and in a paper he presented to IACA in 1999 (Keegan 1994, 1996, 2000, 2001). The main points arising from these articles may be summarized as follows.

1. The lines drawn in Rouse’s charts are not as reliable as they appear. Insofar as they rest on radiocarbon dates, they do not take account of calibration. The tendency is for calibrated dates in the period between the first and fifteenth centuries A.D. to be somewhat younger than their uncalibrated counterparts. The effect of taking account of calibration would not

simply be to move everything nearer to the present, but to blur the lines between the entities named in the boxes.

2. There are other factors that tend to blur those lines, both in respect to the Ceramic/Archaic–Age frontier and the Ceramic Age entities themselves. First, the criteria usually invoked are not always sufficient to differentiate supposed Archaic age sites from Ceramic Age stone raw material procurement sites. The absence of pottery is not always an infallible indicator of age. Second, conservatism in the use of pottery, particularly on the periphery, means that sharp lines for the Ceramic boxes are illusory. As Keegan puts it, Rouse’s charts imply that “everyone in an area suddenly abandoned the old style and adopted the new,” but this is not the case.
3. The above are boundary problems. Much more serious is the claim that, “it is not clear that pottery decoration adequately reflects meaningful social units,” and that it may not represent a “people and culture,” as consistently assumed by Rouse (Keegan 2000:138–139). The most telling example quoted is that of the Cedrosan Saladoid, which, as we have seen, had a key role to play in Rouse’s system. Keegan points out that most Saladoid pottery is not decorated. Hence it is possible that the highly decorated vessels (for which this entity is well known) constituted no more than a “veneer shared by local groups, a sort of pottery lingua franca, which would have acted to reinforce social ties between islands and over long distances.” “When viewed as a social process, Cedrosan Saladoid pottery may be telling us more about the social alliances required to survive an isolated existence than it tells us about the local groups who used it.” The suggestion therefore is that Rouse’s system obscures as much as it reveals, and that “we need to adopt a more complex view of the region’s culture history.”
4. In his presentation to IACA in 1999, Keegan widened his attack on Rouse’s series concept, since, he considered, its use and abuse served only to mask significant internal variability in the units concerned. “Lumping decorative motifs into broad series categories tells us nothing about the processes that operated to produce (them) or about the reasons these modes were used and maintained” (Keegan 2001:237). Hence, he concluded with an admonition: “Avoid the oid.”

More recently, Keegan has concentrated his fire upon the nature of the Saladoid expansion into the West Indies, and has presented an alternative scheme whereby the Ostionoid “people and culture” may have derived not from the

Saladoid but rather from the preceding Archaic communities (Keegan 2004, 2006). If so, the thick black line on Rouse's chronological chart (Figure 5) would dissolve away, at least in places.

With regard to the nature of the Saladoid expansion, Keegan suggests that it may not necessarily have taken the form of "island-hopping" through the Lesser Antilles from Trinidad and Grenada onward. By boat there could have been a "direct jump" from the South American mainland to Puerto Rico. Certainly until we have better dates from the Windward islands this scenario cannot be ruled out, though whether all prehistorians would wish to assume "chaos" as their guiding principle is another matter.

As already mentioned, one of the "jogs" on Rouse's chronological chart (Figure 5) is at "frontier 3" where the Saladoid advance supposedly halted between 200 B.C. and A.D. 600. When the advance resumed, what was Saladoid had become Ostionoid, by default in Puerto Rico. This scenario is now challenged by Keegan, on the grounds that the Archaic peoples themselves took the initiative and became pottery makers. The evidence for this comes mainly from Cuba, but the contention is that Ostionoid pottery as such probably developed in Hispaniola. As Keegan puts it, a "progressive" development of this sort is more likely than the emergence of a new style by way of a "degeneration" from the Saladoid standard. "The Saladoids were never able to establish more than a foothold in Hispaniola, and eventually the Archaic peoples who had prevented their westward expansion . . . [expanded eastwards and] . . . the Saladoid system of representation collapsed" (Keegan 2006:7).

This alternative scenario will surely give rise to a debate, which Keegan's argument is no doubt intended to stimulate. Whatever the outcome, it should be noted that the situation in Jamaica is unaffected, since by Keegan's own admission the Ostionoids (or bearers of the "Redware culture") were the first to arrive there—wherever they came from—a "happenstance" occurrence as he puts it (Keegan 2004:43). He also emphasizes that, in his view, the "Ostionan and Meillacan peoples in Jamaica exhibit completely different characteristics, which suggest that they were two entirely different cultures."

Rouse himself would hardly have disagreed with reasoning of that nature, but the truth is that the general thrust of the arguments Keegan and others have advanced has been corrosive of the entire underpinning of the Rouse system. Rouse's framework may be one that he and others, however reluctantly, still use, but one has a sense that a turning point has in fact already been reached. As he said in the first of his three articles for the *Journal of Archaeological Research*, "Caribbeanists have finally stopped digging 'telephone booths' in mid-

dens to get decorated potsherds to plug into space-time diagrams” (Keegan 1994:255). The subject, he claims, is already transforming itself into a “self-reflective, critical study of the peoples who produced those sherds.” If “what is needed is a new agenda,” it looks as though that agenda is already being put into practice. So far as Jamaica is concerned, Keegan’s own excavations at Paradise Park have shown what can be achieved by concentrating on the ecological side of things (Keegan et al. 2003). Nonetheless, the question of how the archaeological material, strictly speaking, can best be ordered (a question that Rouse spent his lifetime trying to answer) will still be there demanding answers, and time will tell what new framework will be judged appropriate.

The Taínos and the Arawakan Language Family

The name that should be given to the indigenous inhabitants of the Caribbean, and the Greater Antilles in particular, is a topic that cannot be avoided, either in this work or in general. On the one hand, James Lee, throughout his career, referred to the Pre-Columbian inhabitants of Jamaica as Arawaks, and his collection of archaeological material is also referred to in this way. On the other hand, it has been recommended that the use of this term should be abandoned (Reid 1994) and the alternative of Taíno is becoming more widespread in the island. Thus, although Jamaican people at large still continue to talk of the Arawaks, the museum at White Marl, when it was reopened in 2001, was designated Taíno instead. Probably at the present time this does cause some confusion. In reviewing the matter, it might be convenient to start once again with Irving Rouse.

In his survey published in 1948, Rouse used the term Arawak for the inhabitants of the Greater Antilles, on the grounds that this was the language they spoke, rather than Taíno (Rouse 1948:495, note 1; 521, note 9). As he said, this nomenclature was introduced into the Caribbean by D. G. Brinton in 1871, although the recognition of the Arawakan language family as such goes back much further than that, to 1782, thanks to the work of F. S. Gilij in Venezuela (Payne 1993:130). The term Taíno also has a respectable antiquity, since it was apparently introduced by C. S. Rafinesque in 1836. It is a word meaning “good” or “noble,” and is said to have been used by the inhabitants to indicate to the Spaniards that they were not Caribs. In 1987, however, Rouse reversed his position, stating that the term Arawak was “a misnomer and should be abandoned” (Rouse 1987:87). He did so for two reasons, (1) because Taíno was the name first proposed, and (2) because “the islanders spoke a different

language than the mainlanders,” who in addition were now to be referred to as Lokono rather than Arawak. He did not deny that both Taíno and Lokono (as well as Island-Carib) belonged to the Arawakan language family, and this is how they appear in his language “family tree” (Rouse 1992:Figure 11).

What then is the Arawakan language family? In a very broad framework, it can be regarded as belonging to the Equatorial branch of the Amerind phylum distinguished by F. H. Greenberg (Ruhlen 1991). Ruhlen estimates that the Arawakan family once contained as many as 80 languages. Payne gives a more modest total of 35 languages that are still extant, but even so they are very widespread over the South American continent (Payne 1993:Figure 1). One of the most important of the now extinct Arawakan languages is Maipuran, and this occupies a key position in the various attempts that have been made to trace back the history of the family through time. In Rouse’s version (1992:Figure 11), “Proto-Maipuran” gave rise to several languages, including a “Proto-Northern” group that emerged at about 1000 B.C. This group includes Taíno, Island-Carib, and Lokono, as well as six others. Oliver (1989) has proposed a somewhat different scheme. It is in fact more recent than Rouse’s model, since the version published in Rouse’s book *The Tainos* repeats what he put forward already in 1986. Oliver modifies Rouse’s concept of a “Proto-Northern” group, and proposes a simpler scheme that brings together only three other languages with Taíno, Island-Carib, and Lokono. One of these, Caquetío, is also extinct (Oliver 1989:Figure 22). His branching scheme suggests that there was a split from “Proto-Maipuran” c. 2.6 millennia ago. Island-Carib, Taíno, and Lokono formed a separate group, which then itself split 1.8 millennia ago. Caquetío split off by itself at some point before then, whereas the other two languages (Paraujano and Guajiro) separated from each other only in the last millennium. If this scheme is correct, therefore, the divergence between Taíno, Island-Carib, and Lokono is quite recent, but all of these languages ultimately came from a “Proto-Arawakan” hearth situated on the Middle Amazon (Oliver 1989:Figure 26).

If the three languages diverged relatively recently, it should be no surprise to find similarities between them, and the extent of the similarities is emphasized by Silvia Kouwenberg (2005a) drawing upon the work of Douglas Taylor (1977). The task is hampered by the fact that the extant record of Taíno (around 200 words and phrases culled from Spanish and Italian sources of the fifteenth and sixteenth centuries) does not allow for the reconstruction of a full language. Nonetheless, Taylor isolated about 60 forms that do allow for comparison between Taíno, Island-Carib, and Lokono. Kouwenberg comments

Table 2. Some Taíno, Island-Carib, and Lokono Cognates.

Taíno	Island-Carib	Lokono	meaning
canoa	canáoa	kanóa	canoe
nahe	néhene	-nahàlle	paddle
guanábana	ouallápana	oarafana	sour sop
higüera	uira	iuida	calabash
hobo	oúbou	hóbo	hog plum
iguana	-youhána-	jóana	iguana
zemí	chemíin	sémehe	spirit-helper, god

that “these cognates are sufficiently close that contemporary observations to the effect that a single language allowed for communication across the Caribbean” are well supported. A selection from Taylor’s list of cognates, Table 2, may demonstrate the point.

Some of the differences in spelling are more apparent than real, and morphological as well as lexical correspondences exist. Kouwenberg concludes, “the resemblances are so close that Taíno, Island-Carib, and Lokono can be considered dialects of the same language” (2005a).

In this regard, it may be necessary to say something further about the status of Island-Carib. This is not in fact a Carib, but a “mixed,” language (Kouwenberg 2005a). A mixed language is one that combines the grammar of one language with the lexicon of another. Such languages usually arise where mothers and fathers come from different ethnic and linguistic backgrounds. Island-Carib was documented in the seventeenth century in Dominica by Raymond Breton, and was said to have two “styles” of speaking, a male and a female. The “female” style is a variant of Arawakan referred to as Iñerí (Taylor 1977). The “male” style was mixed. Kouwenberg comments, “Legend has it that Carib invaders of the Lesser Antilles cohabited with Arawak women after having exterminated the Arawak men. However, mixed households often come about where foreign intruders attain political and/or economic supremacy, and although this is typically supported by military supremacy, it does not require the extermination of indigenous men” (2005b). Be that as it may, the fact is that with the passage of time the proportion of Carib forms within the language has decreased. As is well known, the survivors of the Island-Caribs are today the Garífuna, or Black Caribs, of Central America (Rust 2001). Slaving ships wrecked on St. Vincent in 1635 brought Africans and indigenous Americans

together, to form another kind of “mixed” people. They were then expelled from St. Vincent by the British in 1796–1797 and they settled in Honduras and Belize, where they currently occupy some 60 fishing villages. Their language today is overwhelmingly Arawakan, hence the close similarity between it and Lokono and what we know of the extinct Taíno language.

As we have seen, these are really dialects of the same language. What about Taíno as a designation for the native inhabitants of the Greater Antilles? In this regard, Arie Boomert has apposite things to say, in his chapter in Volume 1 of the UNESCO *General History of the Caribbean* (Sued-Badillo 2003:189, note 18). As he remarks, much confusion has arisen because of the inability of scholars to differentiate between linguistic, cultural, and ethnic units. “Both the names Taino and Arawak were bestowed upon the now extinct natives of the Greater Antilles by nineteenth century linguists.” Linguistic affiliation does not equate with ethnicity (the feeling of belonging to a particular group of people); hence, in his view the use of the term Arawak is ill advised, and on balance he opts for Taíno. But, as he says, it must be realized that this term also does “not represent the original name which the Indians of the Greater Antilles gave to themselves.” “As they were organised in sociopolitical chiefdoms, they probably lacked such an overall name but, instead, called themselves after the chiefdom to which they belonged.” Hence there would be numerous local names, and, if only to avoid fruitless argument, it would be well to bear this in mind.

4 / Environment, Fauna, and Flora

Jamaica is the third largest island in the Greater Antilles. Its maximum length from east to west is 235 km and its maximum width from north to south is 80 km. The total area of the island amounts to 11,264 km² (Porter et al. 1982; Robinson, in Donovan and Jackson 1994). It is situated 150 km south of Cuba and 180 km west of Hispaniola. For conventional purposes, the Jamaican map projection has its origin at 18° N latitude and 77° W longitude, at a point of intersection just west of Spanish Town (Mugnier 2003; Stewart 2002, 2003a, 2003b). As a whole, Jamaica is situated between 17° 43' and 18° 32' N latitude, and 76° 11' and 78° 21' W longitude (Senior 2003). The physical geography of the island has been well described in a number of sources (Clarke and Hodgkiss 1974; Downer and Sutton 1990) as well as in the National Atlas of Jamaica (1971).

Geography

Jamaica is a mountainous island, half of it being over 300 m (1,000 ft) above sea level. The highest point is the Blue Mountain peak at 2,256 m (7,402 ft). In general one can speak of a highland interior surrounded by a flat coastal periphery, but the terrain is much broken up, with a number of separate features over 600 m (2,000 ft) in height, as shown in Figure 6. On the east are the John Crow, the Port Royal, and the Blue mountains, the tallest on the island. Then there is an east-west trending ridge of hills in the form of the Bull Head and Dry Harbour mountains, the Cockpit country, and Dolphin Head.

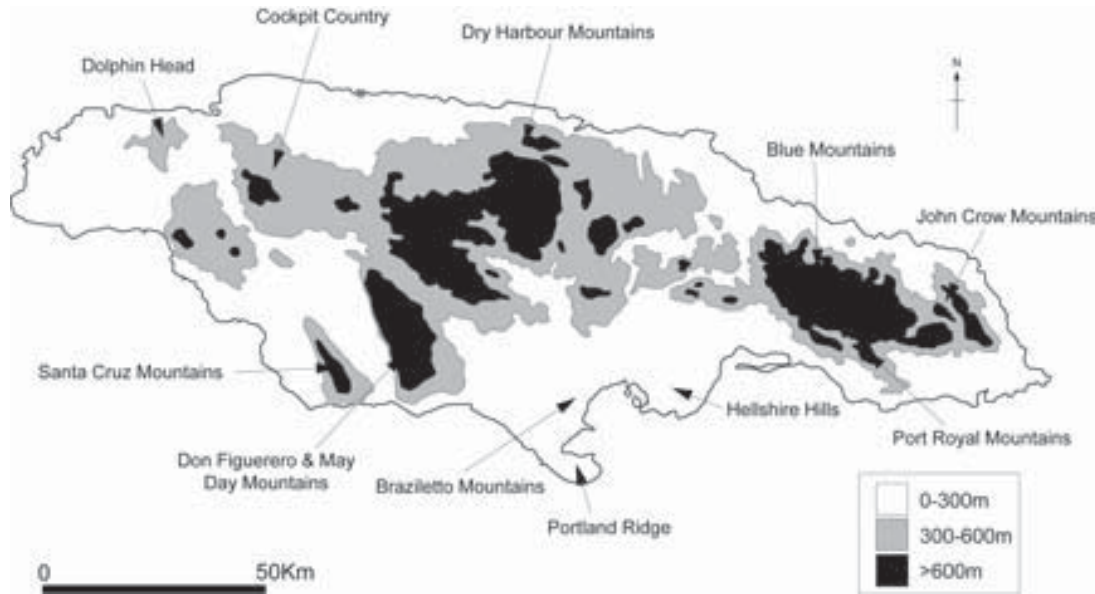


Figure 6. Jamaican topography, elevations, and main mountain ranges.

South of them, and trending north-south, are the Don Figuero and May Day mountains, and the mountains of Santa Cruz. At a lesser elevation, on the south coast, are the promontories of the Hellshire hills, the Braziletto Mountains, and Portland Ridge, the latter constituting the southernmost tip of the island. All of these formations, with the exception of the Port Royal and Blue mountains, are of limestone.

Where there are mountains there are rivers. The National Atlas of Jamaica (1971) defined 20 drainage basins in the island, and their boundaries as set out in the Atlas have been adopted in this work, as shown in Figure 7. In most cases, the major river within each basin is obvious, and it gives its name to the basin. Moving clockwise around the island starting from the southeast, this is so with the following major rivers: Plantain Garden, Morant, Yallahs, Hope, Rio Cobre, Minho, Black River, Cabarita, Great River, Montego, Martha Brae, Rio Bueno, White River, Wagwater, and Rio Grande. In a few cases, there is no single dominant stream, and so the choice of a name for the basin concerned has been somewhat arbitrary: Gut River, Orange River, Spot Valley, Pagee River, and Drivers River, moving around the coast as before. Most of these rivers tend to run north or south to the sea, with the exception of the Plantain Garden and Montego rivers. They generally have steep gradients with many rapids and waterfalls, although the volume of water varies appreciably throughout the year. Where the rivers run through impermeable bedrock, as Zans pointed out, they tend to have a “normal dendritic drainage pattern” (Zans et al. 1962). This

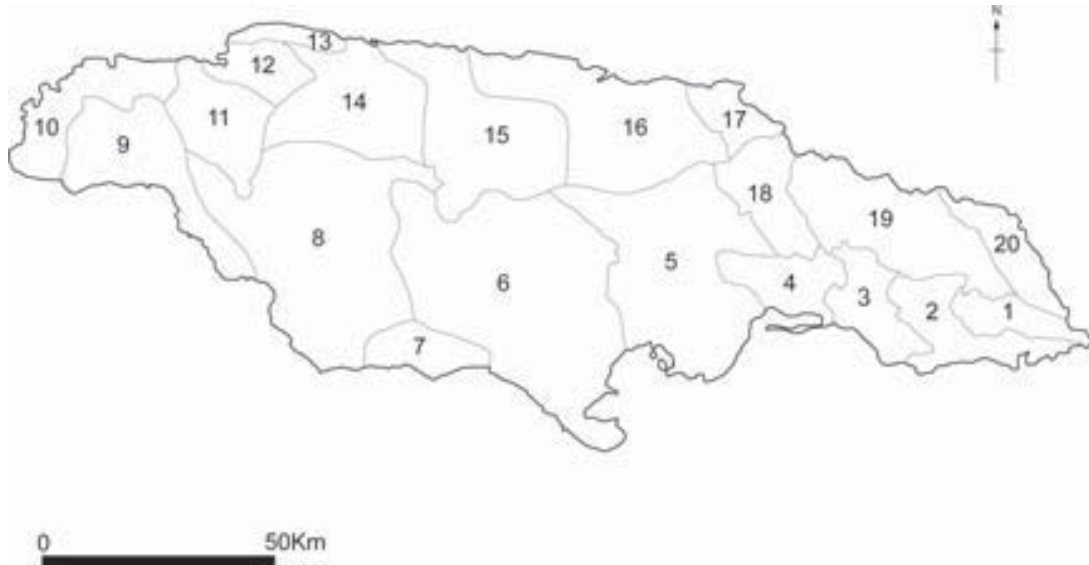


Figure 7. Twenty drainage basins as defined by the National Atlas of Jamaica (1971). *Key.* 1. Plantain Garden, 2. Morant River, 3. Yallahs, 4. Hope, 5. Rio Cobre, 6. Minho, 7. Gut River, 8. Black River, 9. Cabarita River, 10. Orange River, 11. Great River, 12. Montego River, 13. Spot Valley, 14. Martha Brae, 15. Rio Bueno, 16. White River, 17. Pagee River, 18. Wagwater, 19. Rio Grande, 20. Drivers River.

can be seen particularly well in the headwaters of the Rio Cobre. Elsewhere, where the rivers pass through limestone, the pattern is quite different. The karstified interior of the island in the center and west literally swallows the water, which flows for long distances underground, leaving extensive areas on the surface quite dry. The effect can be clearly seen in places. Thus the Cave River, on the other side of the watershed north of the Rio Minho, flows east before disappearing underground for 22 km, and then reappears as the Rio Bueno. The Hectors River runs west, alternately sinking and rising, before it becomes the Black River. Groundwater is present in these areas, but it is often at a great depth, up to 600 m (2,000 ft) beneath the surface.

The Jamaican climate as a whole is described as tropical maritime, modified by the prevailing NE trade winds and the daily pattern of land/sea breezes. Temperatures are high, but vary both diurnally and in accordance with elevation. The average daily temperature ranges between 27°C (80°F) in the coastal lowlands and 13°C (56°F) in the Blue Mountains. Detailed meteorological records have been kept since 1870 (Brennan 1943; Grinsted 1953; Rogers and Saunders 1963). Three broad zones in terms of precipitation can be discerned. The region with the heaviest rainfall, > 2,540 mm (> 100 in) per year, is in the northeast, on the windward slopes of the Blue Mountains, and in the west-

central region, around the Cockpit country. Three-quarters of the island, including the central mountainous region, is characterized by moderate rainfall, > 1,270–2,540 mm (50–100 in) per year. The driest areas, with rainfall of < 1,270 mm (50 in) per year, occur on the south coast, between Bull Bay and Black River, and on the northwest coast, between Discovery Bay and Montego Bay. Total rainfall for the island averages 1,960 mm (about 77 in) per year, with a mean number of 123 rainy days. Such fluctuations as have occurred over the period during which records have been kept are due to no more than random factors (Gray 1990). The global figures conceal considerable variations over the year. There are two peak rainy months, May and October, with average rainfall totals of 239 mm (about 9 in) and 309 mm (about 12 in) respectively. The driest month is March, with an average total of only 74 mm (about 3 in) each year. Of course, there are exceptional events, notably the 37 hurricanes that struck Jamaica between 1685 and 1974 (Clarke and Hodgkiss 1974). It is not for nothing that the word is derived from the Taíno “huracan” (Senior 2003).

The combination of topography and climate means that Jamaica can be divided into a number of natural habitats, granted that in the conditions of today more than 75 percent of the land surface has been either cultivated or disturbed. Those singled out by Downer and Sutton (1990:Figure 4) are as follows: (1) wetlands. The largest such areas at the moment are the Negril and lower Black River morasses. Here can be found lagoons and shallow estuaries, mangroves, swamps, and swamp forests. (2) dry limestone forests. Remnants of these can still be found at places along the coasts and inland, for example in the Dry Harbour Mountains. No doubt in the past they were much more widespread. In very parched areas, they are replaced by dry limestone scrub, as in the Hellshire hills, and at Round Hill, the latter the site of a Pre-Columbian settlement. (3) wet limestone forests. Most notably these include Dolphin Head, the Cockpit country, and the John Crow mountains. (4) montane forests. These are essentially confined to the upper reaches of the Port Royal and Blue mountains. Sixty percent of the plant species in these areas are endemic.

Geology

Clearly, the topography of Jamaica is a direct reflection of the geological history of the island. This has been well studied over many years (Donovan et al. 1995; Fincham 1997; Porter 1990; Porter et al. 1982; Robinson, in Donovan and Jackson 1994; Zans et al. 1962). As Robinson reports, the stratigraphy of the island is “simple in outline, but complex in detail.” (See Figure 8, a map

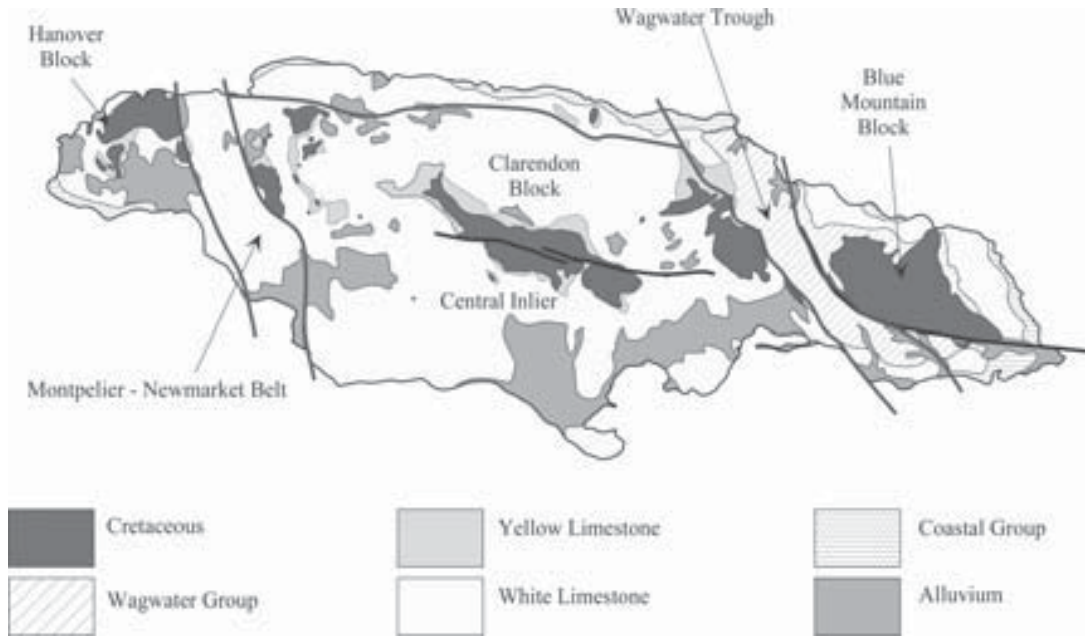


Figure 8. Jamaican geology, blocks, and belts.

kindly prepared for use here by Simon Mitchell.) The story can be told in terms of the standard geological time scale (Porter et al. 1982:Table 8-1). The oldest deposits in Jamaica are Cretaceous in age, dating from about 100 to 65 million years ago. They occur in the form of “inliers,” of which there are 27 on the island (Donovan et al. 1995:Figure 2). They are very variable in size, the largest being the Central and the Blue Mountain inliers, but they all take the form of “windows” that have been revealed by the erosion of later deposits that once covered them. Jamaica during the Cretaceous was part of a volcanic island arc, in a subduction zone; hence, the exposed deposits are in part terrestrial and in part of marine origin. The boundary between the Cretaceous and the Tertiary, at 65 million years ago, is otherwise known as the “K-T” boundary, the time when dinosaurs were suddenly extinguished, although as yet none have been found in Jamaica. The Tertiary lasted until about 2 million years ago, and during this time the crucial events occurred that determined the present basic shape of the island.

The early Tertiary, up to the middle Eocene about 45 million years ago, was a time of serious tectonic movement. It was then, as Robinson has put it, that “block and belt” features were created that “controlled sedimentation patterns over the island” for the remainder of the period. The main blocks, from west to east, are the Hanover, Clarendon, and Blue Mountain blocks. They are separated from one another by the Montpelier-Newmarket and Wagwater belts re-

spectively, each constituting riftlike features or grabens. They are delineated by NW-SE trending fault lines, which are matched by another set of lesser W-E fault lines on the north and south coasts. The Wagwater belt in particular was filled with a complex succession of deposits: (1) coarse grained terrestrial breccias and conglomerates, known as the Wagwater Formation; (2) extrusive volcanic flows from three dacite centers, known as the Newcastle Volcanics; and (3) marine sandstones and shales, known as the Richmond Formation. This heralded an island-wide marine transgression that was characteristic of the middle Tertiary, from the middle Eocene to the middle Miocene about 12 million years ago. The traces of this marine transgression are found all over Jamaica today. As Robinson states, "probably no part of the island region was more than a few metres above sea level at any time" during this period. Two phases are represented, first the Yellow Limestone and then the White Limestone. The Yellow Limestone consists of a mixture of limestone and clastic sedimentary rocks deposited in fluvial to offshore marine environments. The White Limestone "supergroup" (with 11 Formations) consists of more or less pure carbonates, deposited in deep water, high energy open shelf, and low energy lagoonal settings. White Limestone presently forms more than half of the island's surface, and if all limestone outcrops of whatever type are included the total rises to two-thirds. Hence it is not surprising that Anthony Porter refers to calcium carbonate (calcite) as "the foundation mineral of Jamaica, just as limestone is the foundation rock." Chemical erosion has transformed many of the limestones into karst landscapes of which the Cockpit country is the most spectacular.

The late Tertiary saw Jamaica once again emerge from the sea, and there was renewed tectonic activity, as well as extensive erosion (which revealed the inliers) and corresponding sedimentary deposition, which continued into the Quaternary from about 2 million years ago. In the first place, the erosional process created what is referred to as the Coastal Group, a discontinuous series of deposits formed by fluvial transport of material from the interior, particularly well shown at Bowden, Manchioneal, and Buff Bay, along the north coast between Port Maria and Ocho Rios, and south of Negril. Finally, in the Quaternary, the alluvial flat lands of southern Jamaica were formed, including the Liguanea, St. Jago, and Vere Plains, as well as the St. Georges Plain around Frome.

Unfortunately, not a great deal has so far been done to study the fluctuations of Quaternary climate and environment in Jamaica. What has been done is concentrated in the southwest of the island, in the Negril and lower Black River morasses (Digerfeldt and Hendry 1987; Hendry 1981; Hendry and Digerfeldt

1989) and at Wallywash Great Pond (Holmes et al. 1995; Paul et al. 1993; Street-Perrott et al. 1993). To these may be added the studies carried out by Maharaj (1996) at Treasure Beach and by Keegan and colleagues (2003) at Paradise Park, and there are some international points of comparison thanks to the work carried out at Miragoane in Haiti (Hodell et al. 1991). Hendry and his colleagues obtained 55 radiocarbon dates on basal peat samples from Negril and Black River and on this basis reconstructed sea level rise curves for the two areas, the assumption being that at any point in time peat would not form unless the sea had reached that level. The sequence of events was worked out in particular detail for the last 10,000 years at Negril (Hendry and Digerfeldt 1989:Figures 3–8). Mean sea level at the start was at least 12 m below current levels. It rose rapidly in the early Holocene but slowed down considerably after about 5,000 years ago. No detailed record could be established regarding fluctuations in this more recent period. It is of course known that sea levels worldwide were lower during the last glaciation, particularly during the last glacial maximum (LGM), so the general tendency demonstrated is not unexpected.

Wallywash Great Pond has provided much fuller evidence for climatic fluctuations both in the late Pleistocene and the Holocene in this part of Jamaica. Situated in the White Limestone area between Black River and Parrottee Point, it is the largest perennial freshwater lake in the island, with a maximum depth at present of 5 m. Although it is only 7 m above sea level and no more than 3 km from the coast, there has been little or no intrusion of brackish water throughout its existence. A 9.23-m core was put down in the floor of the lake in 1984, and the results have been reported in detail. Originally, 10 radiocarbon and four uranium/thorium dates were reported (Street-Perrott et al. 1993:Figure 6). The older of the radiocarbon dates were discounted since they were stratigraphically inconsistent and not in accordance with the U/Th dates, and some doubt was also thrown on the younger of the dates since it was felt that they could have been affected by old carbon. Subsequently, four more uranium/thorium dates were obtained, and the five youngest radiocarbon dates were calibrated. Combining only these with the eight U/Th dates, a much more satisfactory picture of the dated stratigraphical succession at the lake has emerged (Holmes et al. 1995:Figure 7). As the authors comment, there is “excellent agreement” between the calibrated radiocarbon dates and the new U/Th ages, making it possible to reconstruct the history of the Holocene section of the core in detail, as well as the basal part where reliance is placed only on U/Th dates.

At the base of the core at > 9 m depth, a loamy paleosol developed on weath-

ered limestone at a time estimated at 125,000 years B.P. The lowest three meters of the core (9.23–6.32 m) are dated between about 120,000 and 93,500 B.P., corresponding to the last interglacial, when there were at least four lake high stands. The mid-section of the core is two m thick (6.32–4.34 m) and dates from 93,500 to about 10,700 B.P., corresponding to the beginning of the Holocene. Lithologically, this part of the core is composed of earthy calcareous mud, and the lake for the most part was dry. Chronologically, this was the last glacial period, and even in these latitudes it may have been quite cold. The uppermost four meters of the core (< 4.34 m) show three cycles of alternating wet and dry conditions, indicated lithologically by marls and organic calcareous muds. The last of the marls, characteristic of the present lake environment, commenced at a depth of 1.81 m. The dates and characteristics of the three episodes are as follows:

Cycle 3a. At the beginning of the Holocene, the lake refilled with fresh water.

A high stand occurred at about 10,000 B.P.. A relatively wet climate prevailed until about 8000, followed by a drier phase until about 5000 B.P.

Cycle 3b. A second wet phase is dated to about 4400–3300 B.P., again followed by a drier phase lasting for about 2,000 years.

Cycle 3c. The final cycle commenced at about 1200 B.P., when the deposition of the latest marl began and the lake “filled suddenly” to around its present level. An influx of new mollusk and ostracod species is correlated with a “major flooding event” in the neighboring Black River catchment area. This episode is defined by an uncalibrated radiocarbon date of 1180 ± 60 B.P., corresponding to a calibrated interval of 1770–990 B.P.

The authors compare this flooding event (which from the prehistoric point of view is clearly of most interest to us) with the sequence from Lake Miragoane in Haiti (Hodell et al. 1991). In some respects this sequence contrasts with that from Wallywash Great Pond, but a “dry episode” from about 2400 to 1500 B.P. agrees with the Jamaican evidence. This was followed by a “brief period of wetter conditions” between about 1500 and 900 B.P., which again suggests that the two islands were responding to general changes in the Caribbean. This evidence is not inconsistent with that from Paradise Park (Keegan et al. 2003). Two sites here have uncalibrated radiocarbon dates of 1180 ± 60 and 490 ± 60 B.P., corresponding to calibrated ranges as published of A.D. 710–990 and A.D. 1320–1490 respectively. The older site (Wes-15a) is defined as Ostionan (Redware) and the more recent one (Wes-15b) as Meillacan (White

Marl/Montego Bay). There are evident differences in exploitation patterns between the two sites, and Keegan suggests that these may reflect in part a change in environmental conditions. There may have been a rise in sea level of up to one meter between the two occupations. “This would help to explain why part of the Ostionan deposit is today below the water table” (Keegan et al. 2003). More rainfall would also have increased river flow and reduced near-shore salinity in Bluefields Bay, with consequent effects for molluscan environments, including the growth of a coastal mangrove swamp.

At Treasure Beach we do not have dated deposits, but the geological succession outlined by Maharaj (1996) is congruent with the above. Red sandstone deposits in the form of a hardpan (the Sandy Bank member) are widespread from Great Pedro Bluff to Fort Charles. They occur at elevations of up to 6 meters above sea level and are correlated by Maharaj with the last interglacial. West of Boatman’s Bay they are overlain by what Maharaj describes as “one of the largest palaeo-dunefields in the Caribbean” (1996). Originally these eolian sand dunes may have been transverse, that is, perpendicular to the dominant onshore sea winds. But the White Limestone hills on either side may have created a wind tunnel effect, forcing the migrating dunes to reorient themselves. The suggested date for the dunes is only “middle Holocene” in general, but they are very important from the archaeological point of view, since the important Redware site of Great Pedro Bay (E4) is situated directly beneath them. As described by Lee, the site consists of “small areas of thin midden deposition on the pre-dune land surface.” Since this is one of the few sites on the island where there is a direct correlation between archaeological occupation and large-scale geological events it would be desirable to obtain greater precision as to when the dune field was formed.

The prehistoric occupation of the island was affected by its geological makeup in other ways than this. Limestone obviously played a very prominent role. Fincham (1997) lists 1,073 caves in Jamaica as a whole. Most of them are in the White Limestone, and the same applies to the relatively small number that was used by the Pre-Columbian inhabitants. The Montpelier Formation, one of 11 in the White Limestone “supergroup,” is particularly important from the raw material point of view. This is a chalky facies that outcrops widely on the north coast (Zans et al. 1962). It contains numerous good quality chert nodules, the use of which at several Taíno sites was remarked upon by Lee (three in St. James parish, two in Trelawny, one in St. Ann, and five in St. Mary). In Lee’s view, the material would have been collected in the form of pebbles along the rivers and beaches rather than extracted from the matrix.

Lee's comments on the use of chert come in the article by himself and Roobol (1976) on the petrography and source of the raw materials employed by the Pre-Columbian inhabitants of the island. He was above all concerned with the lithology of the petaloid celts that have always so much interested collectors in Jamaica. He listed 456 such celts (including 22 from his own collection, which he had sliced for microscopic study) in eight different raw material groups (including conch shell) (Roobol and Lee 1976:Table 1). As he pointed out, 408 (89.5 percent) are of metamorphic rocks, the great majority 357 (78.3 percent) being of greenstone. The provenance of 343 of these celts was also recorded in terms of their occurrence in two north-coast and five south-coast parishes, the respective totals being 144 and 199 (Roobol and Lee 1976:Table 2). The most interesting point to emerge from this study, as he emphasized, is the fact that the metamorphic rocks must have come from the south side of the Blue Mountain inlier. Lee considered that in this case, too, river pebbles provided the main source, from the lower reaches of the Morant River in particular. Since the celts are found all over the island, the conclusion is inescapable that they were transported from this area and that an extensive trade network existed. Relatively speaking, the proportions of nonmetamorphic rocks are greater in the southern parishes, suggesting that here (but not on the north coast) there were some suitable local sources as well.

Lee's conclusions with regard to the petaloid celts were confirmed by his study of the other stone artifacts in his possession or known to him, in particular 10 beads and nine pendants. The beads were mostly of white chalcedony and the pendants of clear keratophyre, that is, hydrothermally altered andesite (Porter et al. 1982). As Lee pointed out, these materials are again found only on the southern slopes of the Blue Mountain inlier. In addition, he noted two pendants made of granular quartzite from Bellevue (K13) and Wallman Town (C8). This material cannot have originated in Jamaica and indicates connections to the South American mainland.

Fauna

A general survey of the fauna native to the Greater Antilles is provided by Francisco Watlington (in Sued-Badillo 2003; cf. Newsom and Wing 2004). As Watlington says, it is clear that humans "were not the first terrestrial mammals or even the first primates to populate the islands." At the end of the Pleistocene, land mammals constituted an "anomalous assortment of endemic forms evolved from ancestors that rafted from far away," a process involving "rare ac-

cidents” as described by J. D. Woodley (1968). Among the rodents, there are or were four genera of giant Antillean caviés (Heptaxodontidae) with one form per island. The Jamaican form was *Clidomys*, which in some instances may have weighed up to 40–50 kg. Fossil remains have been collected from several caves in the island, but “it is doubtful that this taxon continued into the human colonization period, since it has never turned up in middens” (Fincham 1997). *Oryzomys antillarum*, the Jamaican rice rat, was certainly present during the terminal Pleistocene, since it has been discovered during excavations at Drum Cave (Jackson’s Bay) where it is associated with radiocarbon dates of $11,980 \pm 80$ and $11,260 \pm 80$ B.P. (Fincham 1997). It became extinct about 100 years ago. The most important rodent from our point of view is the Jamaican coney, or *hutía* (*Geocapromys brownii*), which was a constant feature of the Taíno diet. It is part of a larger family of capromyids that exist on the other islands of the Greater Antilles. As Watlington comments, “they have managed to hang on despite centuries of overexploitation, introduced diseases, habitat destruction, predation by cats and dogs, and displacement by introduced herbivores.” There are or were also three different kinds of native monkeys, the Jamaican form being *Xenothrix mcgregori*. Like the others, this was a true endemic species. In 1996, the first cranial remains were found at Lloyd’s Cave (Jackson’s Bay), in a context that suggests it survived up to the period of European occupation, although it is now extinct (Fincham 1997). Dogs (*Canis familiaris*) were known to the Taínos, but these are said to have been hairless and barkless, similar to the ones originally found in Mexico (Senior 2003). Marine mammals that are or were present include the Caribbean monk seal (*Monachus tropicalis*) and the Antillean manatee (*Trichechus manatus*). As Watlington comments, manatee bones were carved into decorative objects by the Taínos, including amulets and ritual paraphernalia such as vomitory spatulas and snuff pipes. Nonetheless, he surmises that they escaped prehistoric extinction largely because they were “underhunted” by the native peoples.

Reptiles include crocodiles, turtles, iguanas, and snakes. The mangrove crocodile (*Crocodylus acutus*) still exists in Jamaica, although in diminished numbers (Senior 2003). Four species of sea turtles (Cheloniidae) are or were encountered in Jamaica, but of these the green turtle (*Chelonia mydas*) was no doubt the most important in the Pre-Columbian diet. Freshwater turtles (*Trachemys*), or “sliders,” are said by Watlington to have been “relatively common” in prehistoric middens, at least in the other islands of the Greater Antilles. The Jamaican rock iguana (*Cyclura collei*) occurs nowhere else in the world (Senior 2003). It is Jamaica’s largest endemic reptile, still surviving but in a precarious way in the

Hellshire Hills. Its remains have been “frequently encountered” in the caves of the Jackson’s Bay area (Fincham 1997). There are or were six endemic and one indigenous species of snake found in Jamaica, none of them harmful (Senior 2003). The black snake (*Alsophis ater*) is now extinct, but according to C. B. Lewis (AJ 1976, 3) it was once widespread, and its remains have been found for example at Cinnamon Hill (J10).

The role of fish and mollusks in the pre-Columbian diet of Jamaica is well attested. As noted by Roobol and Lee, the queen conch (*Strombus gigas*) in particular was also used for tool manufacture. Less attention has been given to crabs, especially land crabs (Gecarcinidae), although these have frequently been found at Taíno sites. Most common are the black land crab (*Gecarcinus lateralis*) and the white land crab (*Cardisoma guanhumi*). According to Senior, both have continued to be popular and widely consumed. Finally, mention should be made of birds (Downer and Sutton 1990; Senior 2003). About 250 species have been recorded from Jamaica. Since the island lies on one of the main north-south migration routes, many of them are visitors, but 30 are endemic. Since the bones are fragile and relatively difficult to identify, not much evidence has been found of them in excavations so far. They have been recorded, for example at Tower Hill (K7), and no doubt more will be recognized in future.

Flora

As John Rashford states, “the Arawak transformed Jamaica’s natural forests into settlement vegetation by their responses to wild plants and their cultivation of largely introduced domesticated plants” (Rashford 1993). These domesticates for the most part came from South America. Our understanding of the process of domestication on the continent has been transformed by recent work summarized by Piperno and Pearsall (1998). As they point out, horticulture and agriculture constitute an evolutionary continuum, but there is a distinction between them. Horticulture implies the creation of small-scale “house gardens” that typically contain a range of plants from morphologically wild to clearly domesticated. Agriculture is characterized by larger field systems in which domesticated plants are predominant and constitute the staple crops. Food crops are no doubt the most important, but some domesticates had other uses. They include roots and tubers, cereals, vegetables, legumes, and what may be described as tree fruits. These include varieties described by Rashford as “half-wild” or “semi-cultivated.” Sturtevant (1961), Adams (1972), and Vega (2001) give much useful information about them. These authors rely to a consider-

able extent on descriptions given by early Spanish writers such as Oviedo and Las Casas, whereas Piperno and Pearsall have been able increasingly to call in physical evidence such as pollen and phytoliths. It would be appropriate to start with the staple food crops.

Among these, the most important is cassava (*Manihot esculenta*). It seems that bitter rather than sweet manioc was preferred. It had to be grated and squeezed in a press. The pulp was then baked into cassava bread on clay griddles, and the expressed juice was boiled and used as a flavoring. Remnants of griddles have been found in caves and middens all over Jamaica, and form a prominent part of the Lee Collection. It is judged that sweet potato (*Ipomoea batatas*) was second in importance to the native inhabitants. This was boiled or roasted, not made into bread. According to the early Spanish writers quoted in Sturtevant (1961), both cassava and sweet potato were planted in mounds in the Taíno fields, or *conucos*. The mounds are said to have been about 1 m high (3 ft) and 2.7 m (9 ft) in circumference, although in some limestone areas cassava was simply planted in small natural depressions filled with red soil. Other cultivated tubers include yam (*Dioscorea trifida*), cocoyam (*Xanthosoma sagittifolium*) (Spanish *yautía*, grown today on poorer soils in the Dominican Republic), arrowroot (*Calathea allouia* and *Maranta arundinacea*) (*lirén*, or *leren*, being the Spanish for the first variety), and achira (*Canna edulis*). All are of South American origin. Contrary to the situation in Central America, cereals do not loom so large. Maize (*Zea mays*) was known but apparently not much cultivated. According to the early Spanish writers quoted in Sturtevant (1961), it was not ground into flour for bread but was eaten when immature or else parched.

So far as vegetables are concerned, squashes (Cucurbitaceae) are the most important. Five native species were domesticated in the New World, but in the Caribbean it seems that the only one in use was the pumpkin (*Cucurbita moschata*). “Although squashes of modern commerce are grown for their flesh, initial cultivation was likely for the edible seeds and usefulness as containers because the flesh of wild squashes is stringy and bitter” (Piperno and Pearsall 1998). Legumes included peanuts (*Arachis hypogaea*), jack beans (*Canavalia ensiformis*), common beans (*Phaseolus vulgaris*), and lima beans (*Phaseolus lunatus*). Piperno and Pearsall consider that peanuts probably became increasingly important over time. Rich in oil and protein, they provided the necessary balance in a manioc-based diet and aided in the recovery of soils. Nor should one forget condiments. Above all, this means chilli peppers, particularly *Capsicum frutescens* and *Capsicum annum*.

Some domesticated plants were used for purposes other than consumption. Bottle gourds (*Lagenaria siceraria*) were used as containers, and also as floats for fish nets, acting as a counterpart therefore to the stone net sinkers that form a constant component of the Lee Collection. Cotton was also important. There are two domesticated species in the New World, *Gossypium barbadense* and *Gossypium hirsutum*. It was probably the marie-galante variety of the latter that was used by the Taínos in Jamaica. Lee found clay spindle whorls at a number of sites in the dry south of the island, and at Image Cave (MC3) he found “a crudely whittled hardwood spindle,” which he took to be prehistoric. The spindle was presented to the Institute of Jamaica, and is today on display in the Taíno museum at White Marl (Appendix 29). Edward Goodall illustrated the use of a spindle by Carib women to produce cotton on his visit to Guyana in 1841–1843 (Menezes 2002:Plate 3). According to Senior (2003), this former staple commodity of Jamaica is now hardly cultivated. The occasional plant can be found growing wild, but 100 years ago it still provided the basis for a flourishing industry.

There are many tree fruits, described by different authors, making up what Rashford called a “food forest.” Some of the edible fruits included sweet and sour sop (*Annona squamosa* and *Annona muricata*), custard apple (*Annona reticulata*), star apple (*Chrysophyllum cainito*), sea grape (*Coccoloba uvifera*), stinking toe (*Hymenaea courbaril*), macca fat (*Acrocomia spinosa*), hog plum (*Spondias mombin*), mammee apple (*Mammea americana*), golden apple (*Passiflora laurifolia*), sweet cup (*Passiflora maliformis*), naseberry (*Manilkara zapota*) (Spanish *níspero*), pimento (*Pimenta dioica* or *jamaicensis*), wild cucumber (*Cucumis anguria*), prickly pear (*Opuntia dillenii*), dildo pear (*Stenocereus hystrix*), and coco plum (*Chrysobalanus icaco*). Some edible fruits, such as the guava (*Psidium guajava*) (Spanish *guayaba*), had symbolic meaning for the Taínos. The dead were believed to reside in caves during the day, coming out at night in the form of bats to eat this fruit, among others (Vega 2001). There is an explicit connection to Maquetaurie Guayaba, the Taíno lord of the underworld (Senior 2003), whose features appear on one of the artifacts recovered from the cave of Aboukir (Appendix 50). Other edible fruits, such as guinep (*Melicoccus bijugatus*) (Spanish *jagua*), had dual uses, since the seeds produce a blue-black liquid that was used for body paint in ritual ceremonies (Senior 2003). Vega (2001) suggests that this material may also have been used to make drawings in the caves and to dye cotton. Anatto (*Bixa orellana*) had several uses as well (Senior 2003). The seeds are covered with a soft reddish orange pulp, which could be

processed into balls or cakes and used to color oil or food. In addition, it served as a source of red body paint, which provided protection against insects, but also had a ritual significance both in the ball game and in war (Vega 2001).

Some tree fruits had uses that were not connected with food as such, for example the calabash tree (*Crescentia cujete*) (Spanish *higüera*), which provided containers. According to Vega, these containers were used among other things in connection with second burials. The leaves of the wild plantain (*Heliconia caribaea*) were used for thatch and the stems for making baskets called “habas” (Vega 1996). The balsam fig (*Clusia rosea*) (Spanish *copey*) produces a latex that was used to make the balls used in the ball game (Vega 2001). The physic nut (*Jatropha curcas* or *multifida*) was used as a purgative. Lignum vitae (*Guaia-cum officinale*) (Taíno *guayacán*), quite apart from its use in woodworking, was reputed to be a cure for syphilis (Stoudemire 1959). Tobacco (*Nicotiana tabacum*) was another important offering of the New World to the Old (Senior 2003). Jimson weed (*Datura stramonium*) was no doubt present, but the most important hallucinogen was what the Taínos called *cohoba*. This has commonly been identified with *Piptadenia peregrina*, now *Anadenanthera peregrina* (Saunders and Gray 1996:note 2). “To make snuff, the cohoba seeds would be dried and crushed in a mortar and mixed with lime” (Senior 2003).

Finally, it should be noted that, apart from lignum vitae, other trees were commonly used for woodworking and construction purposes, including mahogany (*Swietenia mahagoni*) and the silk cotton tree (*Ceiba pentandra*), referred to by the Taínos as “the dwelling place of spirits” (*guasina*) (Senior 2003). All in all therefore the “settlement vegetation” of the pre-Columbian inhabitants of Jamaica was not lacking in useful products.

5 / Nature of the Collection

The sites fully mapped by James Lee at the final count come to 265, of which 201 are middens or open-air sites and 64 are caves. One hundred ninety-one of these sites have artifacts or other remains that are included in the collection, of which 164 are middens and 27 are caves. In addition, Lee listed 77 sites he did not succeed in finding or mapping. Thirty-six of these are old sites mentioned by his predecessors, particularly Duerden (1897), Cundall (1939), and Howard (1950). Forty-one were new sites that Lee had heard of but the existence of which he was not able to confirm. The details given in the CD-ROM essentially refer only to the 265 fully documented sites, plus the five sites discovered or investigated more thoroughly by others after 1986, as mentioned in Chapter 2. These are Aboukir (Aarons 1994; Saunders and Gray 1996), Potoo Hole (Fincham and Fincham 1998), Nanny Town (Agorsah 1994; Callum, 2001), Paradise Park (with two locations, Paradise and Sweetwater, Keegan et al. 2003), and New Seville (Woodward 1988, 2006).

There are 28,149 artifacts from the 191 sites that are listed in the inventory and that can be accessed under their individual site names in the CD-ROM. There are also 1,221 identified shells, 393 identified animal bones, and 389 identified human bones. In addition, information is provided about 158 other artifacts, which Lee collected but which remain a part of the Lee family property and are housed in Runaway Bay. For analytical purposes, in the overall inventory the material was divided into 18 categories: (1) decorated rim sherds; (2) plain rim sherds; (3) decorated body sherds; (4) plain body sherds; (5) lugs; (6) handles; (7) complete vessels; (8) decorated griddles; (9) plain griddles; (10)

other ceramics; (11) stone celts; (12) chert; (13) other lithics; (14) shell celts or ornaments; (15) shells; (16) fossils, corals, and other organic remains; (17) fauna; and (18) historic remains. Ten of the categories relate to ceramics, and, as so often with prehistoric collections, the great bulk of the material does consist of broken-up pots of various kinds.

Where the material at any site was abundant enough, the decorative techniques present were recorded on a special table according to the element of the pot on which they occurred: lugs, rims, and shoulders, treated independently.

The Decorative Techniques Table employed is illustrated in Figure 9. The lugs are divided into four categories depending on the part of the pot on which they occurred. In the overall list of the material from any site only the independent lugs would appear, in order to avoid double counting, in other words the others would be subsumed under rims, body sherds, and handles. The decoration on the shoulders is likewise recorded according to whether the extant potsherd was a rim or a part of the body. Where the recorded piece is a rim sherd, the details given do not refer to fillets or tops but to the upper part of the vessel, usually above the point of maximum diameter, where decoration was commonly applied. The summed totals for decorative techniques, in favorable circumstances, allow for a meaningful site decorative “profile” to be established. Since the attributes in the table are recorded independently, it is clear that any one vessel or potsherd may be counted more than once. Although the attributes employed are different, the results achieved are in principle not different from those recommended or obtained by Rouse and Vanderwal. In their case, too, the number of attributes exceeds the number of potsherds. Thus, as pointed out in Chapter 2, Vanderwal’s study of 1,325 potsherds from Howard’s trenches A and B at White Marl produced 2,560 elements that formed the subject of his analysis. Procedures and results similar to this seem to be inevitable when one is dealing with pottery as complex as that which occurs in the Caribbean. Nor is this something that is confined to the Caribbean. As J. W. Michels commented, “a pottery vessel can take a bewildering number of forms, is subject to a wide range of decorative techniques, and can be embellished by an unlimited number of discrete motifs and designs” (Michels 1973:102–110). He proposed a study of discrete trait variation that was carried out in exhaustive detail at Kaminaljuyu in Guatemala by R. K. Wetherington and his colleagues (Wetherington 1978). The analysis proceeded by way of 17 variations of different morphological and stylistic attribute categories, as well as general vessel form categories, such as bowl, dish, and jar, resulting in a volume 590 pages

Decorative Techniques Table					
Lugs	Plain	Incised	Other	Total	
Independent					
Rim					
Body Sherd					
Handle					
Total					
Rims	Plain Fillet	Decorated Fillet	Decorated Top	Total	
Shoulders	Red Slip	Incised	Perforated	Other	Total
Rims					
Body Sherds					
Total					

Figure 9. Decorative techniques table.

long. But the material from Kaminaljuyu was excavated, whereas this is not, hence no more than indicative results can be aimed at here.

Apart from decorative techniques, several of the pottery sherds permitted an evaluation of the vessel shape they represented. For the determination of shape, the system elaborated by Anna O. Shepard (1956) was adopted, since (as she claimed) it is rigorous and logical. The approach she adopted is a geometric one, making use of the characteristic points of a vessel profile. These are (1) the end point (base or lip), (2) the point of vertical tangency (usually the maximum diameter), (3) the corner point (a sharp change in contour, making an angle often referred to by archaeologists, for example, Champion 1980, as a carination), and (4) the inflection point (where curvature changes from concave to convex or vice versa). On this basis, Shepard defined four structural classes each divided into four contour types. The full system is illustrated in Shepard (1956: Figure 22), but the shapes commonly met with in Jamaica are fewer than this, and these are illustrated in Figure 10.

The structural classes are as follows:

- (1) unrestricted: the orifice (or mouth) of the vessel corresponds to its maximum diameter.

- (2) restricted dependent: the orifice has a diameter that is less than the maximum vessel diameter, and there is no separate inflection point.
- (3) restricted independent: as in (2), but there is a separate inflection point. Usually it occurs above the maximum vessel diameter, and at this point there will be a different (third) diameter. Commonly, the constricted part of such a vessel is referred to as the neck, but Shepard's terminology is designed to be more inclusive than this.
- (4) asymmetric: noncircular in horizontal section, that is, without a vertical axis of revolution. Shepard did not devote much attention to this class, but it cannot be avoided in the Caribbean, where there are many elliptical, or boat-shaped, vessels.

There are also four contour types, as follows:

- (1) simple: smooth in outline, that is, there are only end points.
- (2) composite: there is a corner point in the contour.
- (3) inflected: a smooth curve (not a corner point) marks the transition from concave to convex or vice versa.
- (4) complex: there are two or more corner and/or inflection points.

When stated in the abstract, this scheme can sound forbidding, but in practice it is not, as should be clear from the illustrations of the different shapes given in Figure 10. Here (1) and (2) are unrestricted simple vessels, and (4) is restricted simple and dependent. (3) and (5) are their composite counterparts, that is, both have single corner points. They are here referred to as carinated. (6) is restricted complex, with two corner points. Both (3) and (6) are very rare. (7) and (8) are both restricted inflected and independent. (7) approximates more closely to what we would call a necked vessel, but the description also includes the form illustrated at (8). (9) is here called a boat end, and obviously comes from an elliptical vessel. There are frequently lugs on the extremities of such vessels. This illustration, unlike the others, does not come from Shepard.

In the collection as a whole, 2,038 potsherds could be classified according to shape, divided as follows: restricted carinated 1,341, unrestricted carinated 3, restricted simple 307, unrestricted simple 208, boat ends 155, restricted inflected 23, restricted complex 1. In addition, there are 36 more or less complete vessels, 23 of which come from two caves and one open-air site (Taylor's Hut CC15, Belle Air AC4, and Round Hill C1). For these vessels the following attributes were recorded: ID#, maximum thickness, height, length, width,

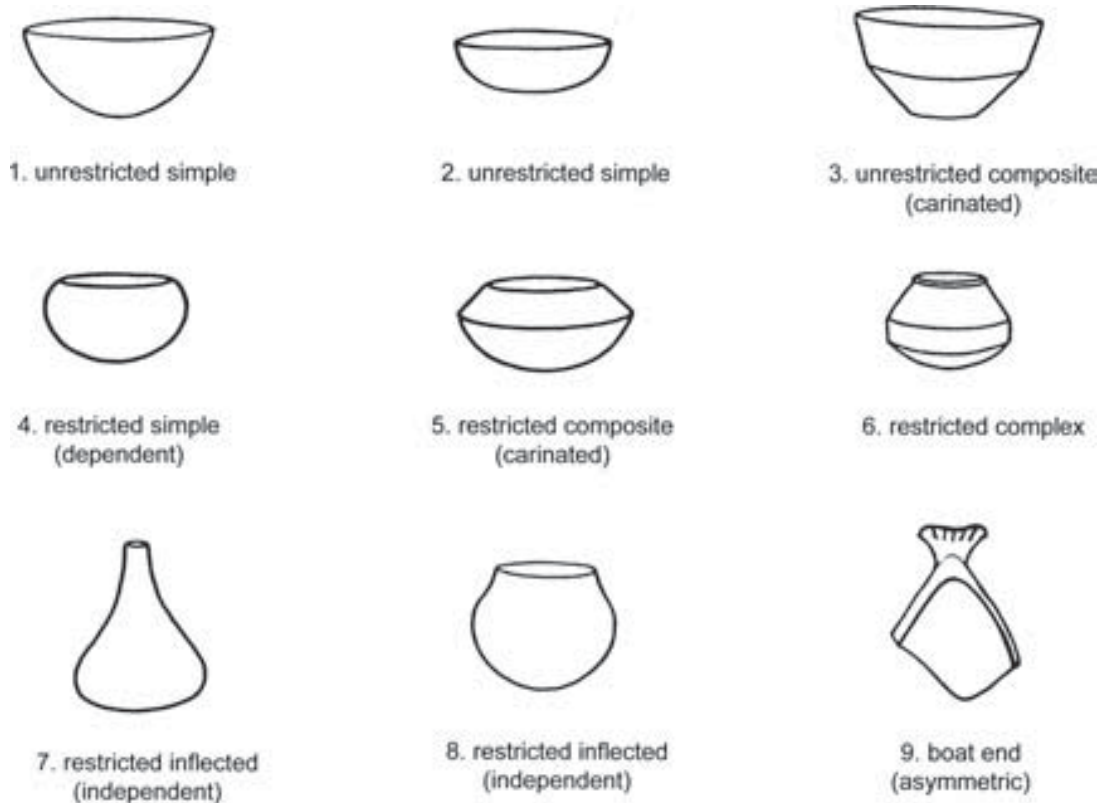


Figure 10. Vessel shapes (after Shepard, 1956).

shape, and type. Type is a looser more general concept than shape as defined by Shepard. Among the complete vessels only four classes were recognized: bowls, boat-shaped vessels, water jars, and other jars. All the shapes illustrated by (1)–(6) in Figure 10 could be grouped as bowls, (7)–(8) correspond to jars, and (9) is no more than a fragment of a complete vessel that would be classified by Shepard as asymmetric. The majority of the long sides of the boats, as well as the complete bowls, are however restricted carinated in shape, and no doubt fragments of both account for the preponderance of this category in the broken-up pieces that make up the bulk of the collection.

Bowls and boat-shaped vessels were recognized by Howard as the two “basic categories” of Jamaican pottery (1956:49). Examples of each type are illustrated, first from Round Hill (C1), a boat-shaped vessel with restricted carinated sides and terminal lugs (c1v5), and second from Taylor’s Hut (CC15), a restricted carinated bowl with a plain fillet and two punctated and incised ridges (cc15v1). Water jars are much less well known, and appear to constitute something of a Jamaican specialty. In the first of his reports on the Bellevue site (K13), Medhurst (AJ 1976, 3:9–10) remarked on the presence of a small number of “buff-yellow potsherds.” They were relatively thick, but there was

no evidence of their having been used as cooking vessels. As he said, “specimens of these buff-yellow sherds have been reported in small numbers from middens all over the island,” and they are commonly regarded as the remains of water containers (cf. Howard 1965:252 and Figure 1i). The Lee Collection contains examples from both caves and open-air sites, and while many of these vessels are restricted inflected in shape that is not always the case. Three examples are illustrated in the CD-ROM. From Spot Valley Cave (JC7) there is the top of a massive water jar with a spout (JC7.3), and there are two complete vessels from Taylor’s Hut (CC15) and Round Hill (C1). The first is restricted inflected in shape and has an incised lug (cc15v11), whereas the second small example is restricted simple and has a handle with an incised ridge (c1v4). All three exemplify the buff-yellow ware recognized by Medhurst.

Altogether, there are 538 line drawings that serve to illustrate the artifacts catalogued in the CD-ROM, as well as 213 digital photographs. The drawings were specially prepared for this project, some by the late Audrey Wiles, and some by Alison West Martin.

In addition, as mentioned above, there are 158 artifacts that form part of the Lee family collection, which are not housed at UWI. These artifacts have been recorded in two ways. Some are included in the CD-ROM as digital photographs, and some have been included here as drawings. The first group consists of 93 artifacts, of which 82 come from sites recorded by Lee and 11 have no exact provenance. In total there are 18 rim sherds, 10 body sherds, 12 independent lugs, 4 other ceramics, 34 chert pieces, 4 other lithics, 9 conch shell celts, and 2 others. The 82 artifacts with known provenance come from a total of 25 sites, of which 6 contain Redware, 5 belong to the Montego Bay variant, and 14 are classified as White Marl. Fifty-seven artifacts from 20 of the sites are described and illustrated in the CD-ROM, as mentioned in Chapter 1. An examination of these images will give an excellent introduction to the kind of Pre-Columbian material that exists on the island and that was collected by Lee. From four of the Redware sites there are 18 illustrated lugs that give a very good idea of the decoration typical for the pottery belonging to this phase: E4 Great Pedro Bay (wlc 31–36), E5 Alligator Pond River (wlc 22–24), E11 Calabash Bay (wlc 28–29), and M4 Bottom Bay (wlc 37–41, 43–44). There are five Montego Bay sites: A19 Windsor, J1 Hartfield, J3 Fairfield, J11 Mount Salem, and T15 Roslin Castle. The 13 illustrated artifacts from T15 deserve particular attention, because the main inventory does not include any material from this site. The decorated fillets, rim tops, and lugs (wlc 75, 80–84) from Roslin Castle are reminiscent of the Montego Bay style, and justify the inclusion of this site

in that group. The remainder of the illustrated material all comes from White Marl type sites. Worth noting is a boat end with incised lugs from S1 White Marl itself (wlc 51), decorated rim sherds from A8 Bengal and Y8 Wentworth (wlc 52 and 27), an anthropomorphic lug from C1 Round Hill (wlc 47), chert and a conch shell celt from Y4 Rio Nuevo (wlc 64, 67, 71, 73, 74), and, especially, three ceramic spindle whorls from M6 Gibbs Run S.E. (wlc 90–92).

The second group contains 65 artifacts, of which 61 come from sites mapped by Lee and four from other known locations. This collection, which is illustrated here at Figures 11–15, consists for the most part of rare and unusual items. In total there are 30 items of stone; 8 fragments of pottery; 12 earthenware beads, stamps, plugs, and pendants; and 15 items of shell. The stone inventory includes 7 pendants, 12 beads, 3 celts, 1 rubbing stone, 1 hook, 1 ball, 1 anthropomorphic figure, and 4 chisels. Lee devoted a special article to stone pendants, which appeared in “Archaeology Jamaica,” with two pages of his own drawings, including some of the pieces shown here (AJ 1973, 2:1–4 and 1977, 2:5). The anthropomorphic figure is from C7 Harmony Hall, and was described as a “carved brown sandstone head,” obviously broken off at the neck, which was probably originally “a decoration at the head of a pestle” (AJ 1967, 11:1). Chisels, although rare, have long been known from Jamaica, and were described by Duerden (1897:31–34, Figure VII and Plate I). A further example, in an excavated context, was found at Coleraine (Y19) in 2003. The earthenware inventory is mostly hitherto unpublished but includes a stamp from M4 Bottom Bay, which, it was thought, could have been used with damp pigment to daub the skin (AJ 1981, 3:4–5; cf. Appendix 11). The shell inventory includes 8 pierced *Oliva* shells and 2 others, as well as 1 celt, 1 pendant, and 3 shell teeth insets that were compared to examples known from Cuba (AJ 66, 12:1). The second edition of Tabío and Rey’s *Prehistoria de Cuba* (1985) contains an illustration of the piece referred to (Figure 26, no. 4). There is also a very good parallel in Ramón Dacal Moure and Manuel Rivero de la Calle’s book *Art and Archaeology of Pre-Columbian Cuba* (1996:Colored Plate 7) where the so-called Cigar Idol is illustrated. In this case the shell inlays for both eyes and mouth are still in place. The 61 artifacts from mapped sites come from 24 locations: 7 Redware sites with 30 artifacts, plus 4 Montego Bay, 1 Port Morant, and 12 White Marl sites with 31 artifacts. Forty-seven of these artifacts, as well as the four pieces from other known locations, are shown here.

Artifacts from six of the Redware sites are illustrated at Figures 11, 12.3, and 15.12. Figures 11.1 and 11.7 are typical pottery lugs, red slipped and incised. The stamp already mentioned is at 11.2, accompanied by earthenware

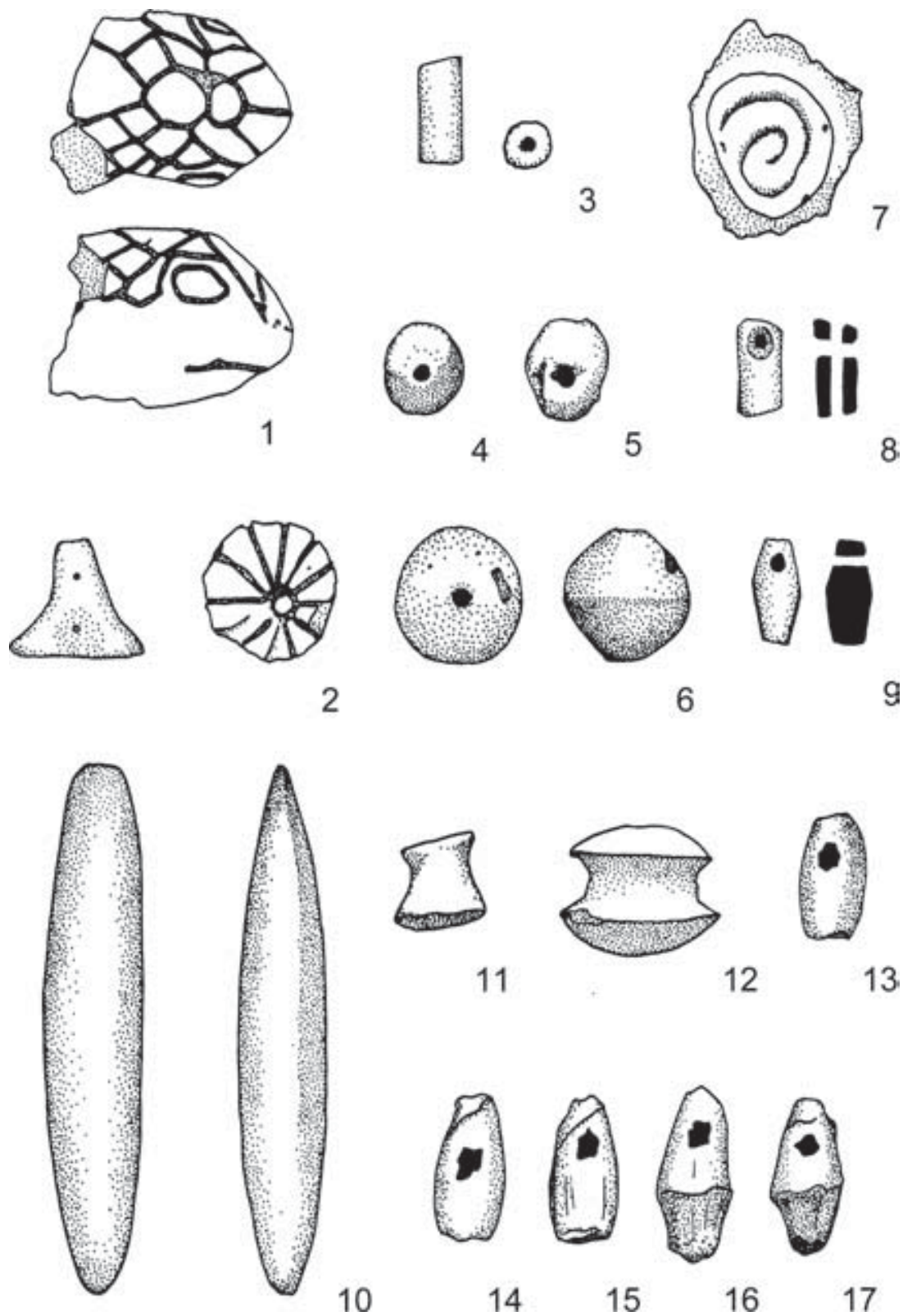


Figure 11. Artifacts from Redware sites. M4 Bottom Bay, M11 Andersons, E4 Great Pedro Bay, E5 Alligator Pond River, EC10 Baalbec. Pottery (1, 7) earthenware stamp (2) stone bead (3) earthenware beads (4, 5, 6) stone pendants (8, 9) stone chisel (10) earthenware plugs (11, 12) pierced Oliva and other shells (13–17).

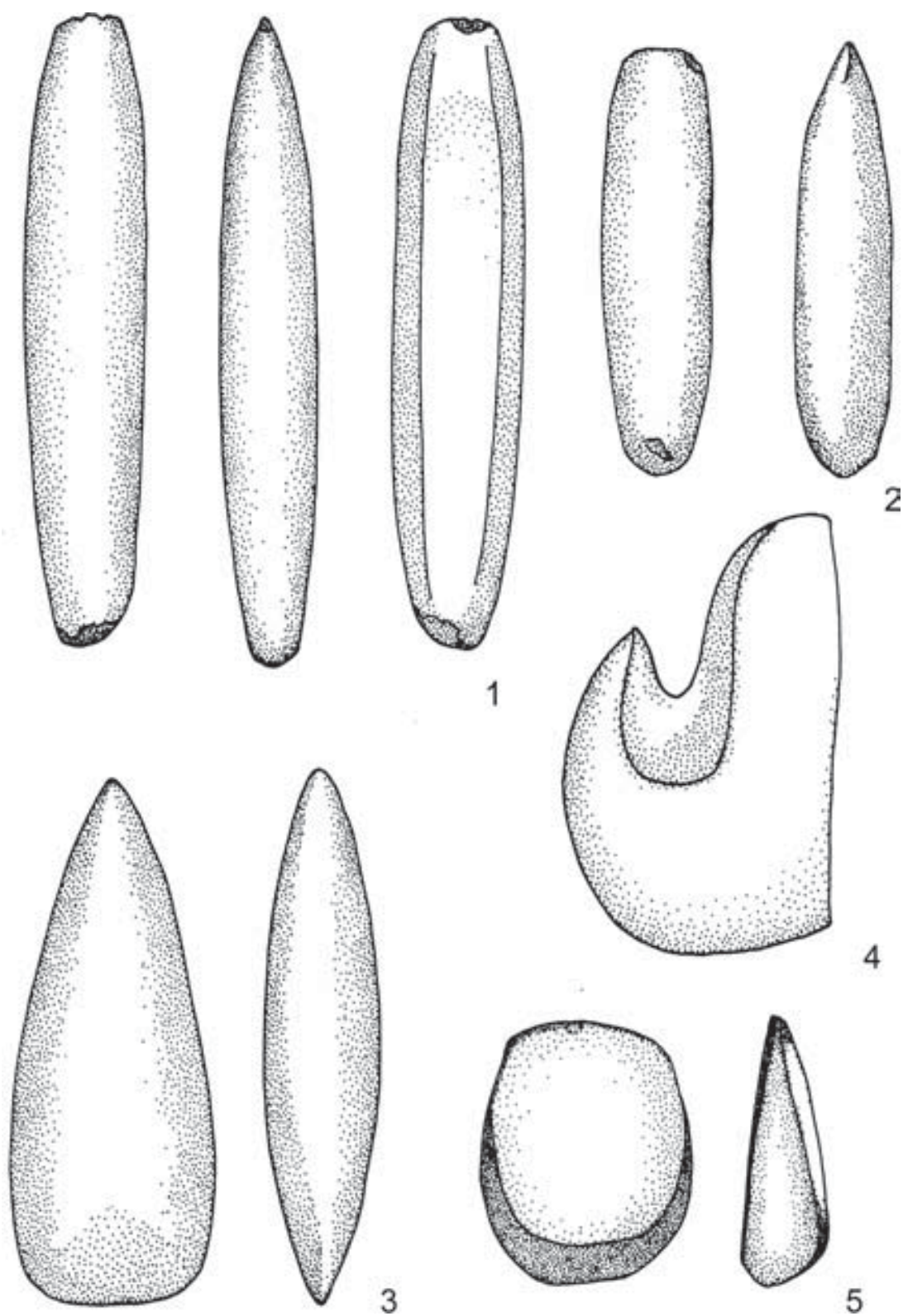


Figure 12. Stone artifacts. S2 Dover, T5 Rio Bueno, E5 Alligator Pond River, Endeavour, Content. Chisels (1 and 2), celt (3), hook (4), wedge (5).

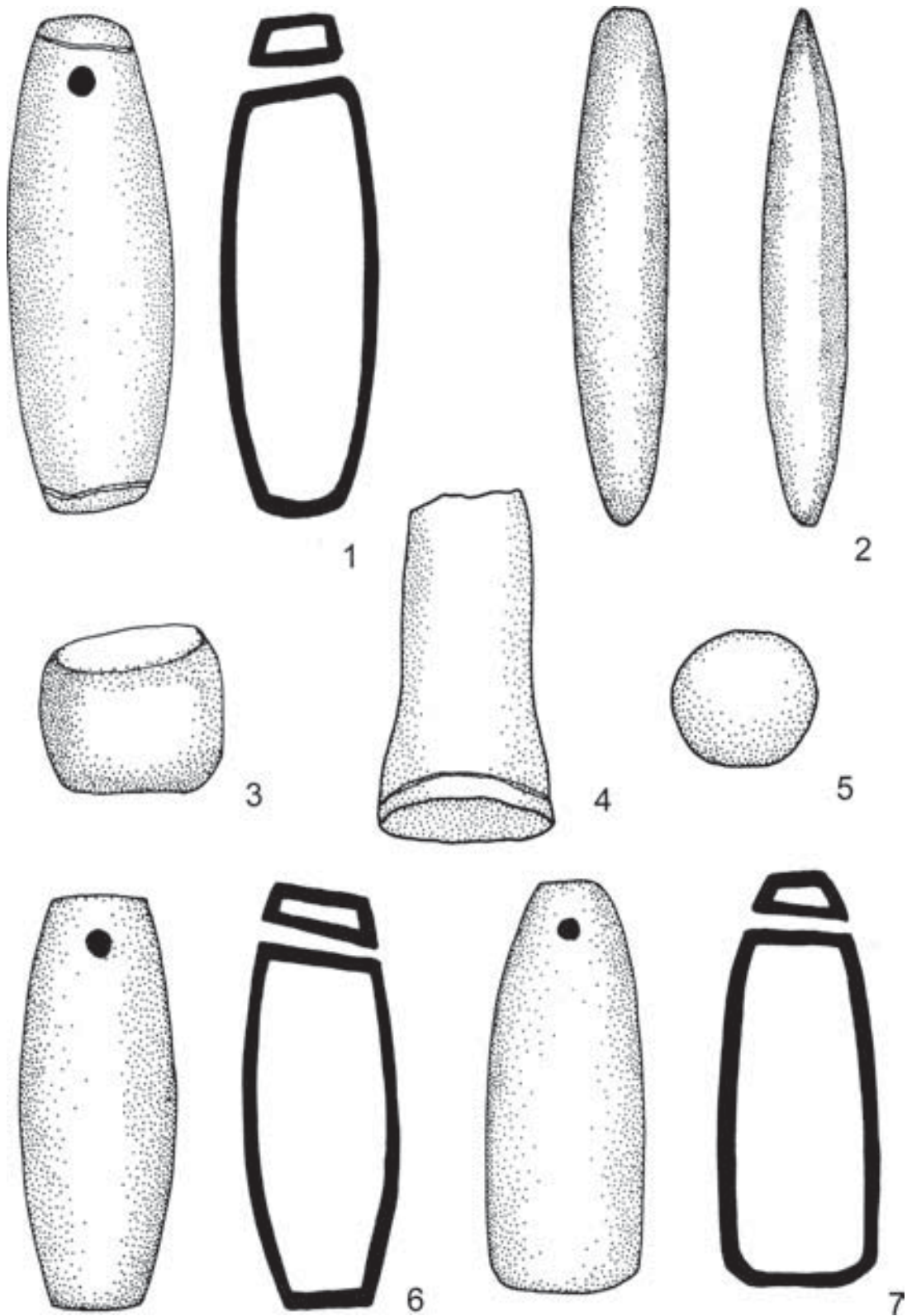


Figure 13. Stone artifacts. A20 Cranbrook, C12 Logie Green, S1 White Marl, S12 Naggo Head, Y21 Ft. Haldane, Gibraltar, Pepper. Pendants (1, 4, 6, 7), chisel (2), rubbing stone (3), ball (5).

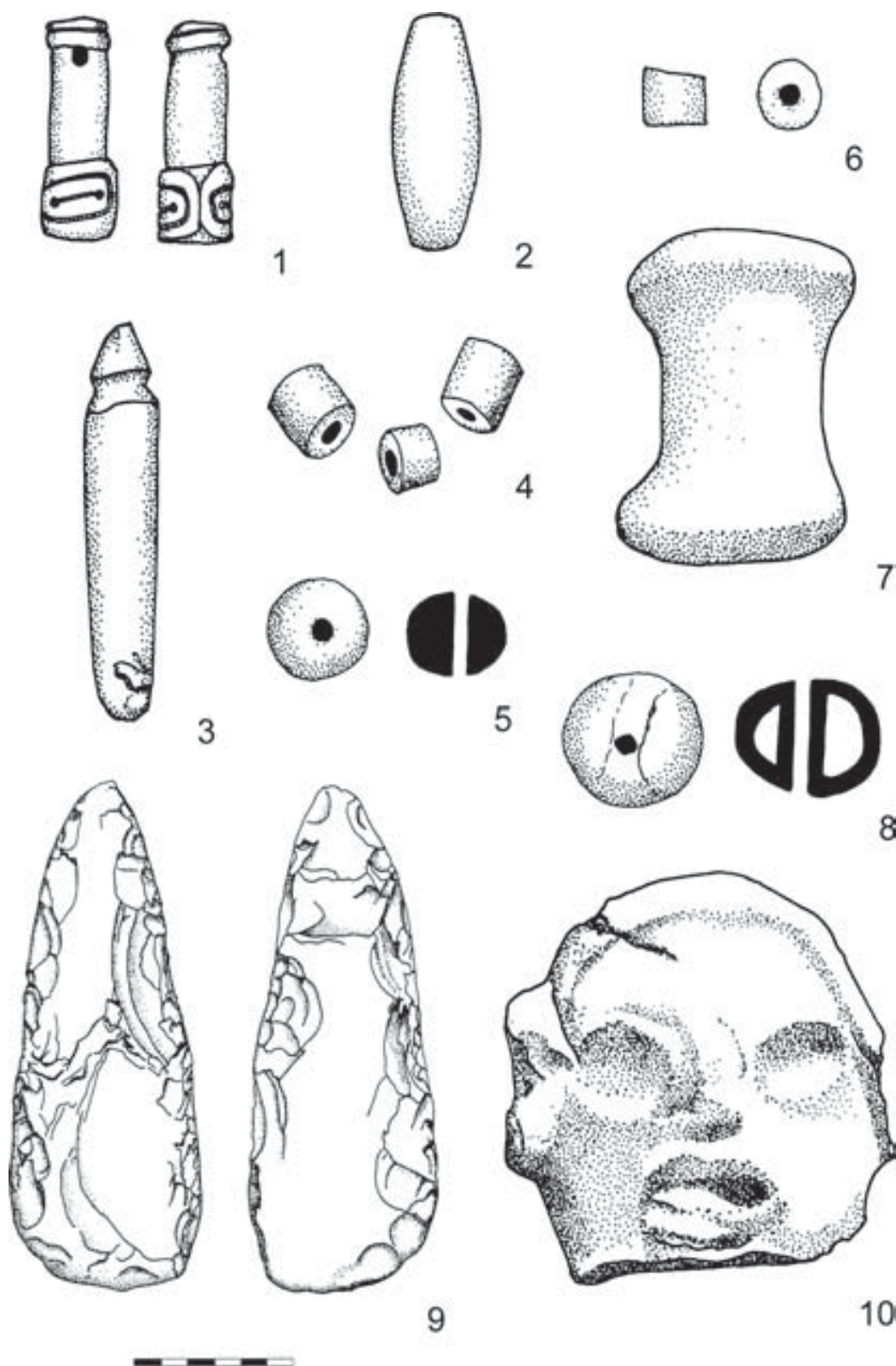


Figure 14. Stone, shell, and earthenware artifacts. C1 Round Hill, C7 Harmony Hall, S1 White Marl, S8 Marlie Mount, S12 Naggo Head, T1 New Forest, Y4 Rio Nuevo, Y21 Ft. Haldane, 012 Green Wall. Stone pendants (1, 2), stone beads (4–6, 8), stone celt (9), stone head (10), shell pendant (3), earthenware plug (7).

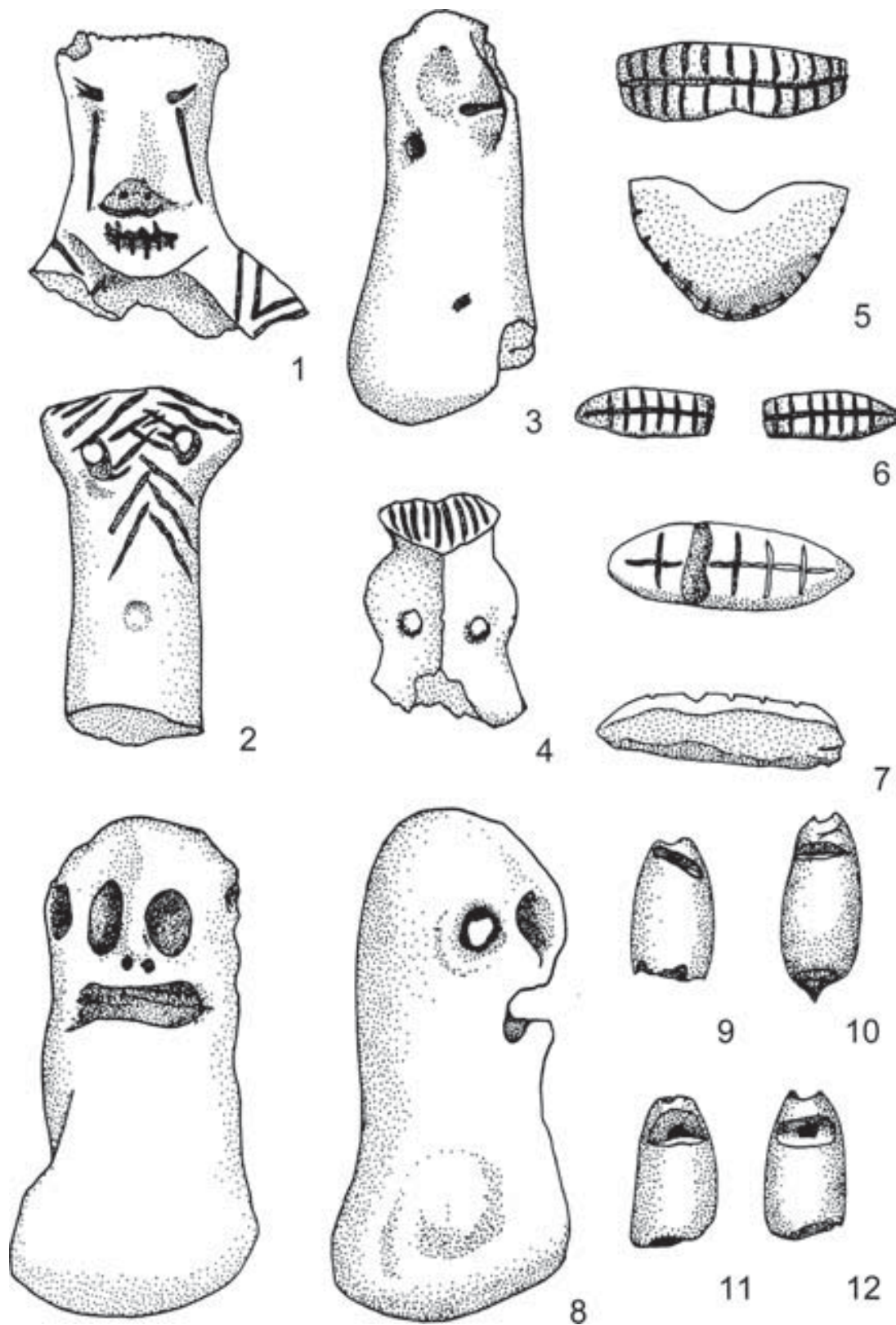


Figure 15. Pottery, earthenware, and shell artifacts. A4 Alloa, A16 Liberty Hill, A47 Drax Hall, C1 Round Hill, H13 Paradise, J1 Hartfield, J10 Cinnamon Hill, M1 Wards Bay, S12 Naggo Head, Y14 Iter Boreale. Pottery (1, 4), earthenware pendant-*zemis* (2, 3, 8), shell insets (5–7), pierced *Oliva* shells (9–12).

beads at 11.4, 11.5, and 11.6. Lee thought they might well have functioned as spindle whorls, although their proportions are clearly very different from those illustrated in the CD-ROM at wlc 90–92. Two earthenware plugs, presumably intended for lip or ear adornment, are at 11.11 and 11.12. Then there are stone beads and pendants (11.3, 11.8, 11.9) and pierced *Oliva* and other shells (11.13–17, 15.12). The chisel at 11.10 comes from EC10 Baalbec cave and the petaloid celt at 12.3 from E5 Alligator Pond River. The first is of green porphyry and the second of dark green schist; it was the last such artifact to be collected by Lee in 1990. Further chisels are illustrated at Figure 12.1–12.2 and 13.2. The first two are of greenstone and are of the type described by Lee as point and blade, as is the example from Baalbec. The chisel at 13.2 is a double-bladed variety. It is made of gray gneiss and comes from Gibraltar (not a Lee mapped site) in St. Ann. The rather unusual artifacts at 12.4 and 12.5 are also from unmapped sites, Endeavour in St. Ann and Content in St. Elizabeth respectively. The first is a hook and was evidently made, as Lee put it, on the blade of a greenstone celt. The second is a wedge made of black metamorphic rock. The artifact at C13.3 may be described as a rubbing stone, and there is a round stone ball from Y21 Fort Haldane at 13.5. This site is not represented in the main inventory.

Three complete pendants are illustrated at Figures 13.1, 13.6, and 13.7. Two are from mapped sites, whereas the third (13.6) is from another unmapped location, Pepper in St. Elizabeth. It is of quartz keratophyre, like the example from C12 Logie Green (AJ 1973, 2:4). Three unfinished or broken pendants are at 13.4 and 14.1 and 14.2. The example from S12 Naggo Head was recovered in 1972. It is also of quartz keratophyre, and was evidently broken at the top. From Y4 Rio Nuevo comes a quartz object described by Lee as an “unfinished pendant or bead” since it is not pierced (AJ 1977, 2:3). The example from T1 New Forest is of buff-colored marble, with a fracture across the base indicating that “some additional length has been lost.” The decoration in the form of curved lines is said to resemble “patterns known from Chicoid style pottery from Hispaniola” (AJ 1973, 2:2). Also illustrated are six stone beads of different types (14.4, 14.5, 14.6, and 14.8), a grooved shell object that was evidently intended as a pendant (14.3), and an earthenware plug of uncertain purpose (14.7) since its size is so much greater than the probable lip or ear plugs from M4 (11.11 and 11.12). A further celt is at 14.9. This is from 012 Green Wall and is of whitish flint, flaked but not polished, in both respects therefore unusual. The sandstone head from C7 Harmony Hall is at 14.10.

Further examples of pottery, this time from a White Marl context, are at

Figure 15.1 and 15.4. Both are anthropomorphic lugs from Round Hill. Both are incised and applied, but the first is clearly on a boat end, with portions of the adjoining rim with an open alternate oblique design on the top. Particularly striking are three earthenware *zemis* from S12 Naggo Head, Y14 Iter Bo-reale, and M1 Wards Bay (15.2, 15.3, and 15.8). It is noteworthy that all of them are perforated, and they may well have served as pendants. The three shell teeth insets already mentioned are from A16 Liberty Hill, J10 Cinnamon Hill, and C1 Round Hill (15.5, 15.6, and 15.7). The first and third are seen from the top and side and have a generally human appearance; the second is viewed from the two sides and seems to have represented a crocodile. Finally, there are four more pierced Oliva shells (15.9–12). Such shells therefore come from all types of site, and they are a well-known item of Pre-Columbian adornment in the Caribbean generally (cf. Dacal Moure and Rivera de la Calle 1996:Colored Plate 13).

Apart from the artifacts, the other items in the overall inventory (nos. 15–17) have not been neglected. The shells have been analyzed by Simon Mitchell (Department of Geography and Geology, University of the West Indies, Mona Campus) and the fauna was further subdivided into animal and human bones. The animal bones were studied by Lisabeth Carlson (Southeastern Archaeological Research Inc., Gainesville, Florida) and the human bones by Ana Luisa Santos (Departamento de Antropología, Universidade de Coimbra, Portugal). Full information on these aspects is contained in the reports of the authors concerned that are part of the CD-ROM, where, as mentioned in Chapter 1, a special display will also be found with 20 of the late Audrey Wiles's paintings of fish. In addition, the results concerning excavated sites and fauna, and burials and human bones, are considered in some detail in Chapters 9 and 10, where an attempt is made to put them within the general context of pre-history in Jamaica.

6 / Mapping the Sites

James Lee commenced his project of “mapping all known Arawak sites in Jamaica” in 1959, with the encouragement of William J. Bryant (AJ 1978, 4:3–4). “The prime goal was to map each site on such a scale as would permit its later relocation by any person experienced in map reading.” He stated that previous archaeological mapping in Jamaica had fallen “far short of this standard.” It became clear at once that a “site numbering system” was needed. As explained in Chapter 1, 13 letters were selected to represent the parishes (Kingston and St. Andrew being combined in one) and site numbers were assigned within each parish “approximately in chronological sequence of discovery.” “Areas containing occupation debris,” that is, middens, were given separate numbers wherever there was a “sterile space” of 400 m (a quarter of a mile) or more between them. “Burial caves, petroglyph and pictograph sites were grouped together and numbered in a different sequence prefixed by parish letter plus a C.” In the example given already, therefore, site C1 in Clarendon is Round Hill and site CC1 (with petroglyphs) is Milk River. Ordinarily, Lee reported, it was possible to make “detailed sketch plans” of the sites by pace and compass, and for many of the middens reported here such plans were made. An example is at Figure 16. The sketch plans are not included in the CD-ROM, but the mapped position of each site is indicated.

As mentioned in Chapter 2, arbitrary designations in terms of the Lee system have been given to five “new” sites that were discovered or investigated after he finished his work on the island. This has been done for the sake of consistency in the present context. It is understood that, before he left, Lee provided

details of the sites he had inventoried to the Jamaica National Heritage Trust (JNHT), but they have not retained his parish record system. It seems that they have kept his numbers but have substituted new parish designations. For example, Green Castle in St. Mary parish (where the joint UWI–Murray State University project was carried out) is Y25 in Lee’s system, but has become STM 25 in theirs. Similarly, Paradise Park (where Keegan worked) became Wes after the parish of Westmoreland. Lee’s system is fully embedded in all his work (throughout the pages of “Archaeology Jamaica” and in all his labelings on the artifacts in the collection) so, whatever system may be adopted now or in the future by others, it is a part of the record that cannot be avoided and has to be taken into account.

Lee’s system has been retained in its entirety in the inventory that has been created here. But, in addition, the position of the sites has been recorded in terms of the drainage basins within which they fall. The *National Atlas of Jamaica* defines 20 such basins on the island and their boundaries have been accepted in this work (Town Planning Department and UNDP 1971). They are illustrated at Figure 7. The *National Atlas* did not assign names to the basins, but for ease of reference we have done so here. In some cases the choice of name is quite clear, where there is a large dominant river such as the Rio Cobre or the Rio Minho, but in other cases a somewhat arbitrary choice has had to be made, as explained in Chapter 4.

The idea of recording the sites by reference to drainage basins has been taken from Peter Harris, who has applied it in Grenada (Harris 2001). As he points out, drainage basins provide a scientific way of organizing the landscape. Parishes are of course a political construct, although in Jamaica it is fair to say that there is a certain degree of correspondence between the two, if only because the east-west spine of the island serves as a broadly similar dividing line in both cases. More importantly, “drainage basins often coincide with ethnic polities.” Harris states that this is the case in Hispaniola, and it may incidentally be noted that such a principle is not confined to the Caribbean (Kirch 2000:Figure 8.2: the island of Mangaia traditionally subdivided into six districts, following the natural stream drainages).

Apart from making detailed sketch maps, Lee also recorded the geographical coordinates for all his mapped sites. In doing so, as he said, he made use of the 1:12,500 and 1:50,000 scale maps that were available at the time. 1:50,000 topographical maps had been issued in 12 lettered sheets A–N covering the entire island (Fincham 1997:Figure 1A). They (like the 1:12,500 maps) employed Imperial measures, that is, miles and feet, and the island grid references and



Figure 16. Sketch plan of Round Hill, Clarendon (C1).

heights painstakingly worked out for each of the mapped sites by Lee (North, East, and Elevation) followed this system. Using his figures, the sites can be located on any of the old maps, which are still frequently used in Jamaica. Between 1982 and 1991, a new series of 1:50,000 scale topographic maps was issued in 20 numbered sheets covering the entire island (Fincham 1997:Figure 1B). This series is metric, that is, it employs kilometers and meters for both the grid and the contours, and it is generally used in newer works describing locations on the island (e.g., Donovan et al. 1995). As pointed out by Edward Robinson, “the projection is the same for the two systems,” hence, “converting from one to the other is a relatively simple matter in principle” (Robinson 1996). The standard conversion formula is:

$$\begin{aligned} X(\text{eastings}) \text{ metric} &= (X \text{ imperial} \times .3048) + 82,360 \\ Y(\text{northings}) \text{ metric} &= (Y \text{ imperial} \times .3048) + 28,080 \end{aligned}$$

This formula has been applied to all of Lee’s figures, so new island grid references and elevations in meters are available for all the sites, in addition to Lee’s original measurements.

While the positions of the sites can be and have been accurately recorded on the published maps of Jamaica using the above coordinates, it must be pointed out that there is a discrepancy between the conventional Jamaican grid and the worldwide electronic grid now used by geographic information system (GIS) surveyors. Account needs to be taken of this in the field if GPS equipment is used. The situation is fully explained by authors included in the References Cited in this volume (Miller 2003; Mugnier 2003; Stewart 2002, 2003a, 2003b). Briefly, the problem arises because, as Miller puts it, in the past “spheroids of different dimensions have been used to represent the earth,” and these do not completely coincide with the ellipsoid which, as Stewart says, now constitutes the “world standard.” This is known as WGS, or World Geodetic System 84. The projection used for the Jamaican 1:50,000 grid is known as Clarke 1866. It has its “true” origin at 18° North and 77° West. This point is to the west of Spanish Town. In order to avoid map positions being recorded both as “minuses” and as “pluses,” it was arbitrarily moved to a “false” origin, which in the metric version is situated 250 km west and 150 km south. All the site locations mentioned above are by reference to this arbitrary origin and they all appear as “pluses.” The “true” Jamaican grid origin, as Stewart says, occurs at a point about 311 m north-northeast of the point that WGS 84 would determine as the correct position for 18° North and 77° West. That is the extent of the discrepancy. Stewart’s advice for GPS users is to “collect data in WGS 84 and

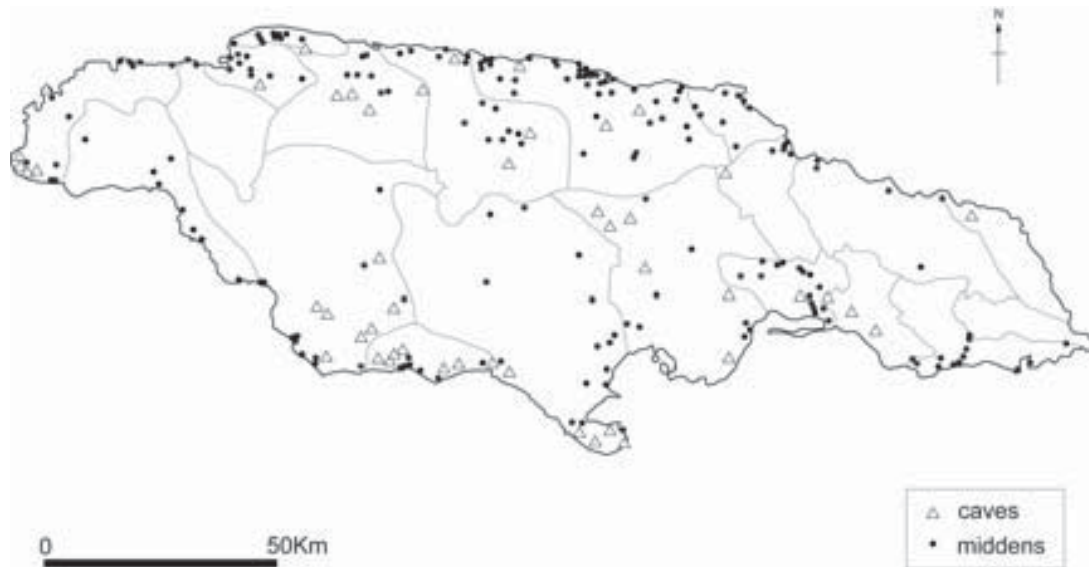


Figure 17. All mapped sites: Middens and caves.

then, when necessary, do a datum transformation” such that the information will tally with the published maps. Information as to how to do that is given by Mugnier. As he says, “no coordinates are ever final”! But that need not deter the users of this CD-ROM.

The position of all the mapped sites, in relation to the drainage basins, is shown in Figure 17. There are 271 sites all told, including the new ones post-dating Lee’s work, but the recorded measurements refer to 280 sites, since nine of them are “double” occurrences, that is, related middens that are less than 400 m apart.

Measurements taken for all the sites include their elevation (in meters) and their distance from the sea (in kilometers). Where possible, the length and breadth of the middens (in meters) was noted, on the basis of Lee’s sketch plans. One hundred and seventy-seven middens were recorded in this way, and their areas were calculated on the assumption that each formed an approximate ellipse, using the formula in Girling (1978) whereby the area = πab , a being half the major axis and b half the minor axis. In order to allow for summary visual representation, the decision was taken to divide the results into predetermined histogram categories, which had regard to the range of the observations. There are five categories for elevation and distance from the sea, and four for midden area, Table 3.

The results for midden area are expressed in square meters, but are easier to refer to in terms of hectares, since 1 hectare = 10,000 square meters. It will be observed that the histogram category sizes are not equal, they get larger as one proceeds to the right. As stated above, this was done for the sake of visual

Table 3. Statistical Categories for Middens.

Elevation (in meters)	(1) < 50	(2) 50–99	(3) 100–199	(4) 200–399	(5) > 400
distance from the sea (in km)	(1) < 2.5	(2) 2.5–4.9	(3) 5–9.9	(4) 10–19.9	(5) > 20
midden area (in m ²)	(1) < 5,000	(2) 5,000–9,999	(3) 10,000–19,999	(4) > 20,000	

Table 4. Middens: Mean Elevation and Distance from the Sea.

Sites	Totals	elevation (m) mean	distance (km) mean
Redware	18	45.10	2.09
Others	262	172.49	4.97
Caves	66	175.25	5.47
Middens	214	160.85	4.57
All	280	164.30	4.78

representation. It is clear that all these measurements are strongly skewed, and would benefit from transformation into logarithms if any sophisticated statistical analysis were to be undertaken. In that case, it would be possible to choose equal category sizes, but our concern here does not go beyond a basic analysis of the data.

The results for the 280 sites in terms of elevation and distance from the sea are set out in Table 4 as mean values. They are subdivided into cultural category (Redware sites vs. all others) and by nature of site (middens vs. caves) before the overall figures are given (all types of site together).

The elevations and distances from the sea for all the sites are also shown as histograms, according to the predetermined categories, in Figure 18. In both cases, allowing for the artificial categories, a degree of bimodality can be observed. The sites with the lowest elevations and nearest to the sea are predominant, but there is a minor peak for sites at an elevation of 200–399 m and at a distance of 5–9.9 km from the sea. The fact that the Redware sites are low down and near the sea is strongly borne out by these figures. All the means have very large standard deviations, and it is clear that the usual rule for positively

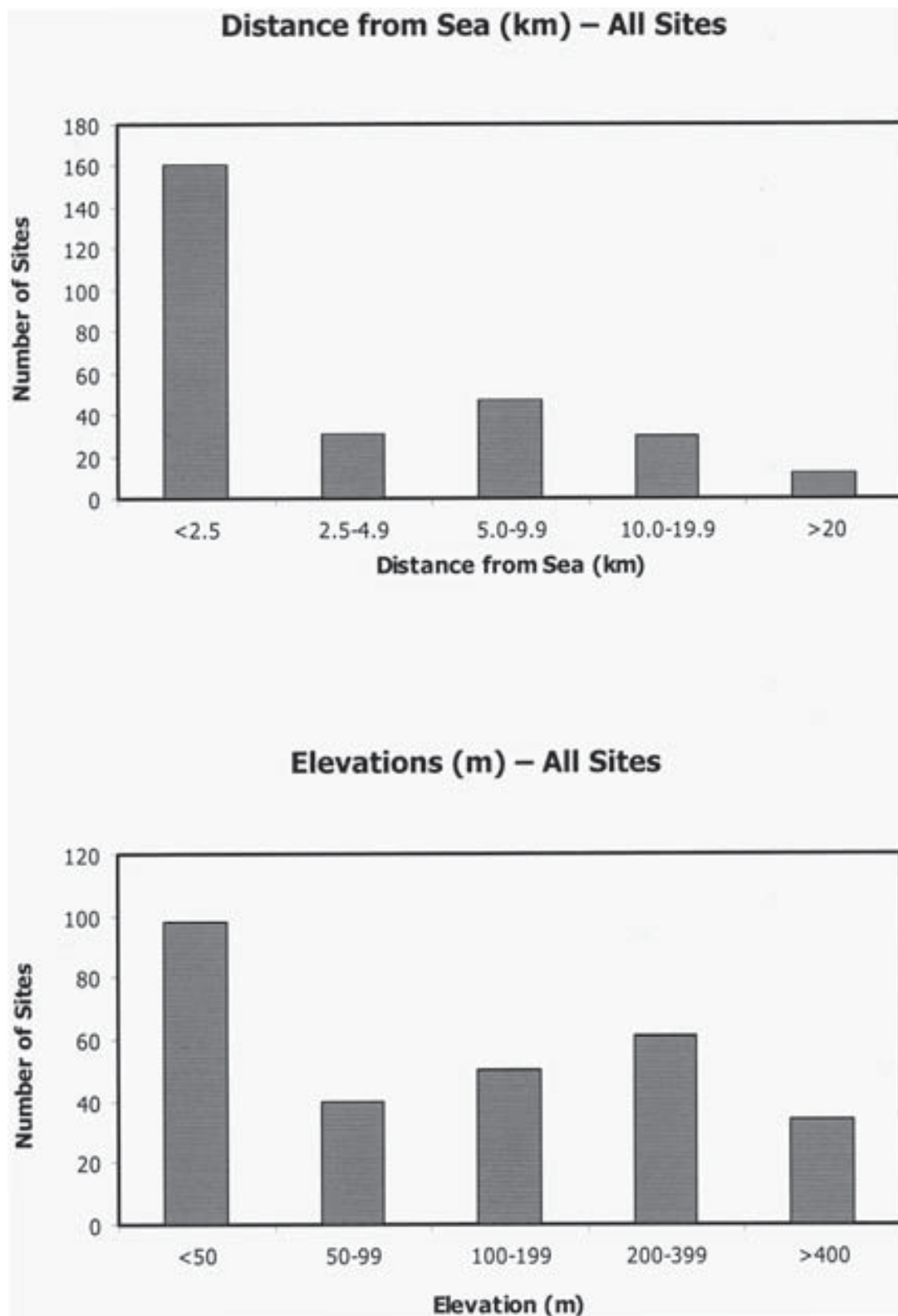


Figure 18. Elevation and distance from the sea: All mapped sites.

Table 5. Middens: Mean Length, Breadth, and Area.

Sites	Totals	length (m) mean	breadth (m) mean	area (m ²) mean
Redware	14	199.07	95.07	16,484.64
Others	163	161.12	79.13	11,678.37
All	177	164.12	80.40	12,058.53

skewed distributions applies: mode > median > mean. Expressing that another way, one can see that the first two categories for elevation (< 100 m) account for 137 sites, or 49 percent of the total, whereas the first category alone (< 2.5 km) for distance from the sea accounts for 160 sites, or 57 percent of the total. Broadly speaking, therefore, these figures quantify what one can see from the map: most of the Pre-Columbian sites of Jamaica are fairly low down and near to the sea, but a significant minority are higher up and well inland.

The length, breadth, and area of 177 middens could be measured. The mean values, again for Redware sites vs. others, as well as overall totals, are defined in Table 5.

The results for all sites in terms of area, according to the predetermined categories, are set out in the form of a histogram at Figure 19. It is evident that the Redware sites on average occupy a larger area than the others. This bears out the observation Lee made that these sites often tend to have a “halo” of spread-out material around them, but that does not mean they necessarily contained more material, because the deposits are frequently very thin (Lee 1980). The mean value for the area of all the sites is 1.2 hectares, equivalent to about 3 acres. The standard deviations for all the figures given here are very large, and once again it is obvious that we are dealing with strongly skewed data. Thus, the first two categories shown in the histogram together contain 106 sites, so 60 percent of all the sites are less than 1 hectare in extent, notwithstanding the mean figure. Twenty-six sites, or 15 percent of the total, are more than 2 hectares in extent. Also at Figure 19 is a scatter diagram showing length vs. breadth for 14 middens in Clarendon parish. This is just an example to show how the two measures tend to vary together. In this case as elsewhere, not surprisingly, these measures are positively correlated. In respect of midden size, therefore, as well as elevation and distance from the sea, we have a first approximation to a quantified assessment of Jamaica’s Pre-Columbian sites, thanks to Lee’s work.

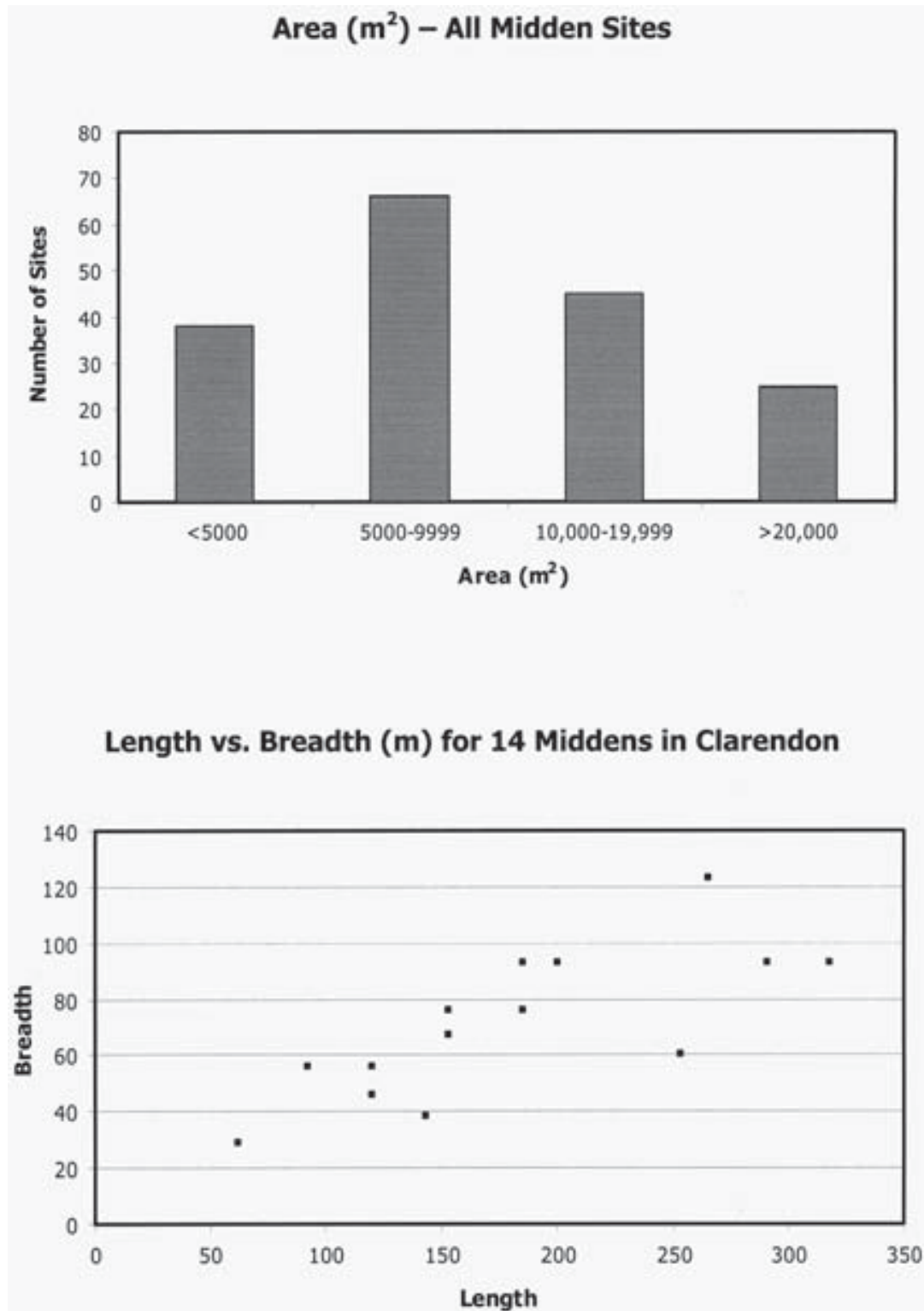


Figure 19. Areas (m²) for all midden sites; length and breadth (m) for 14 middens in Clarendon.

7 / Cultural Variants

Details have already been given in Chapter 2 of the way in which different investigators have over the years recognized at least four distinct cultural variants in the Pre-Columbian material culture of Jamaica, usually on the basis of different pottery types. The groupings are generally referred to as Redware, Montego Bay, Port Morant, and White Marl sites. In addition, “syncretic Hispanic-Indian” wares have been recognized at New Seville.

Redware Sites

Little River (A15) was the first site of this type to be investigated in Jamaica. Marian de Wolf carried out excavations here in 1933, but the results were not published until 1953 (de Wolf 1953). From the largest midden a sample of about 225 sherds was taken, but only 31 were saved. As already pointed out, five of these were fragments of griddles, so her definition of a hitherto unrecognized “style” was based on a total of 26 pieces. She emphasized a number of distinctive characteristics this pottery possessed. “The bodies of the vessels rise fairly straight or turn inward slightly at the shoulder” (de Wolf 1953: Figure 85a–j). One lug was described as being “lightly incised with three radiating lines” and as having “fleckes of red paint near the edge” (de Wolf 1953: Figure 86j). “The other main form of decoration consists of paint and rubbing applied to areas of the vessel surface.” Eight sherds were painted, seven red and one yellow. “Rubbing gives the sherds a dull mat finish.” De Wolf also referred to the existence of D-shaped and looped handles. The Little River ar-

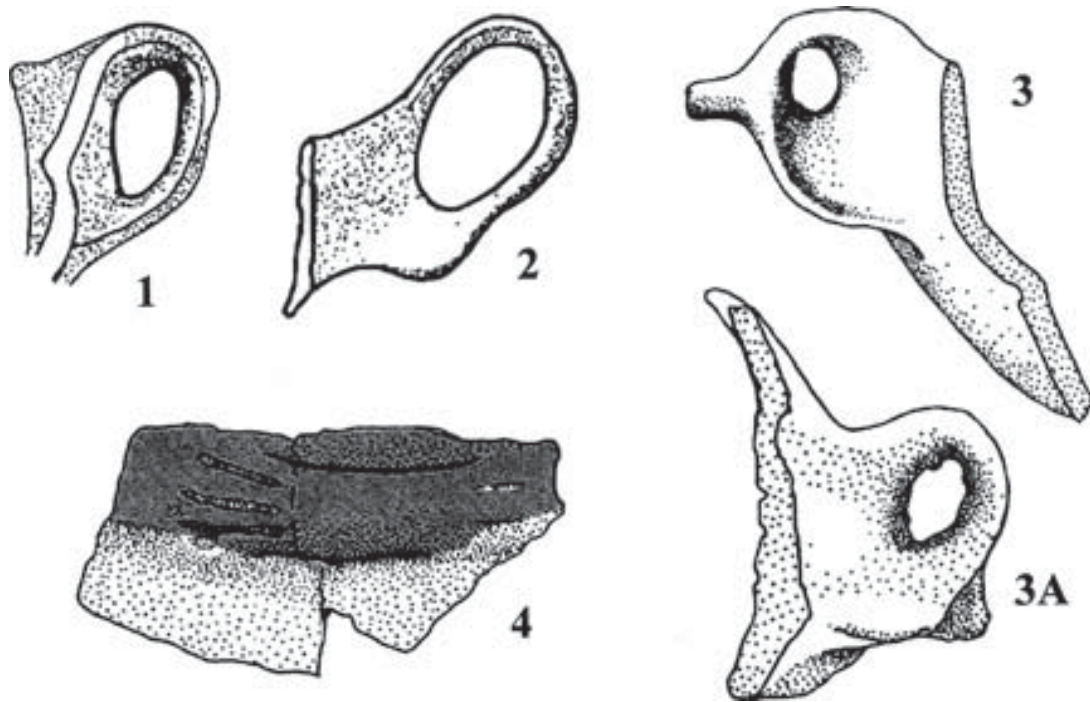


Figure 20. Redware handle types according to Lee.

tifacts as a whole were considered to be “Ostiones-like.” Howard (1956) followed the usual rules with regard to eponymous sites, and therefore named this the “Little River” style. James Lee, however, consistently used the term Redware for all the sites (AJ 1976, 2:1–5; 1979, 1:1–5; Lee 1980) and this usage has been adopted here.

In his report to IACA, Lee laid particular emphasis on the distinctive handle types (Lee 1980:Figures 3–6), which are shown here in Figure 20. The numbered types in this Figure are as follows: 1 plain D, 2 D with flared base, 3 D with flared base and tab or spur, 3A identical to 3 but occurring below rather than on the rim (on the same principle there is a variety of 1A), 4 horizontal loop. In addition, he drew attention to the existence of zoomorphic lugs or handles, often in the form of turtles, with heads, tails, and flippers. Red slip applied to the shoulders of vessels is distinctive, but he commented that “probably fewer than 20% of all pottery objects had this type of finish.” Sandy grit was commonly used as a temper. The artifact assemblages included fragments of griddles; flakes and cores of patinated gray flint; petaloid celts; chalcedony beads; pierced *Oliva* shells; and gouges, spoons, and ladles made of conch shells. Lee mentions two spheroidal pottery beads pierced through in such a way that one of them may be considered a spindle whorl, and three objects, which on grounds of raw material, probably originated from outside Jamaica: two beads

or pendants of white metamorphic rock with flecks of black mineral from Calabash Bay (E11) and a broken figurine of white quartzite found at Great Pedro Bay (E4). There were two artifacts (a bead and a pendant) of nephritic jade from Bottom Bay (M4), and this material likewise is considered foreign to the island. The Redware assemblages were also defined in general by Lee in terms of absences: no massive water bottle handles, and no filleted rims.

In terms of the general characteristics of the sites, Lee remarked that with very few exceptions they were on the coast, situated right at the present high water mark, adjacent to sandy beaches. Consequently, they have been subject to a certain amount of destruction through wave action. The deposits in general are shallow (up to 25 cm thick) but they often spread over a wide area, with a “halo” of material around them that may be several hundred meters in extent. Up to now, no burials have been reported from the occupation sites, but secondary burials were encountered in the few caves that show traces of Redware presence. As mentioned in Chapter 2, Vanderwal excavated Bottom Bay (M4) in 1966, and he gave some details of the material recovered in his thesis (Vanderwal 1968a: 129–130). He provided an analysis of 343 decorated rim and body sherds, but that was all. Lee therefore was justified in saying in 1980 that up to that point there had been “no published report of a systematic excavation of a Jamaican Redware site” (Lee 1980). In view of the fact that the sites were few and the deposits shallow, he took the view that the Redware occupation of the island was probably short lived and there was no overlap or coexistence with the succeeding White Marl occupation.

In his last published map of Jamaican Redware sites, Lee recorded 11 middens and two caves (Lee 1980:Figure 1). The open-air sites were as follows: Alloa (A4), Little River (A15), Cardiff Hall Beach (A30), Great Pedro Bay (E4), Alligator Pond River (E5), Long Acre Point (E6), Billy Bay (E8), Calabash Bay (E11), Sandy Bank (E13), Fort Charles-Nembhard (E15), and Bottom Bay (M4). The first three are on the north coast, the remainder on the south coast. Lee was aware that Redware sherds were present at Alligator Pond (E1) and Porus (M7), and in his final manuscript list E1 (but not M7) was recognized as a Redware site. Porus, close to the headwaters of the Milk River, is much farther inland than any of the other sites, but there seems no reason to exclude it on those grounds. Mammee Bay (A50) and Anderson (M11) were found and mapped after 1980, as was the site excavated by Keegan at Paradise Park. The latter is referred to as Wes-15a (Keegan et al. 2003). Its situation is broadly similar to those of the other coastal Redware sites, as detailed in Chapter 2, and today part of the deposits are below the water table. Keegan suggests, however, that when the site was occupied the sea was perhaps a meter lower than at pres-

ent, and if so all the other sites mentioned would also have been farther from the high water mark than they are now. In 1980, Lee recognized two caves as Redware sites, Parchment (EC5) and Baalbec (EC10). He remarked that they were known to have had “human bones in close association with Redware potsherds.” Likewise at Bull Savannah #2 (EC12) he noted that some elements of the pottery were “distinctly Redware style but without the red colouring” (AJ 1968, 3:1). These pieces are in the Lee Collection, but there are traces of White Marl style material as well, hence one cannot be sure of the human bones context at this site.

Altogether 16 middens and three caves have been recorded as Redware sites in the CD-ROM. The Lee Collection includes at least some material from all these sites, except for Paradise Park. Some of the collections from individual sites are apparently homogeneous; others include an admixture of later prehistoric and historic artifacts. The most abundant material comes from Alligator Pond River (E5), Bottom Bay (M4), and Calabash Bay (E11). Fourth in line is Great Pedro Bay (E4), which may be taken as an example of how this material appears in terms of total statistics and in terms of the attributes recorded in the Decorative Techniques Table (see Figure 9). Altogether the collection includes 297 ceramic pieces; five stone celts; and 19 chert flakes, cores, and chunks, as well as two historic items. Of the 153 rim sherds and 92 body sherds, 23 and 13 respectively have characteristic red slip; a further five are red slip and combined (with grooving, incision, or perforation). Of the 29 lugs (both independent and otherwise) 11 are red slip and combined. There are 28 handles, counted independently, and six on rims, which do not have red slip. They include several of Lee’s numbered types. There are 16 fragments of griddles and one fragment of a ceramic disk, which may have been a spindle whorl. Excluding the last two items, the proportion of red-slipped ware in relation to the total is 17 percent. Twenty vessel shapes could be reconstructed, including 13 restricted carinate, five restricted simple, one unrestricted simple, and one restricted inflected. This material is illustrated in the CD-ROM at the entry for Great Pedro Bay (E4.1–12). The characteristics of the assemblage are also summarized in diagrammatic form at Figure 21. Collected material can never equal in quality that which has been systematically excavated, but this material is certainly instructive in terms of what can be expected of artifacts at a Redware site.

Montego Bay

The Montego Bay style was first distinguished by Howard, as outlined in Chapter 2, mainly on the basis of the material from Fairfield (J3) (Howard 1950,

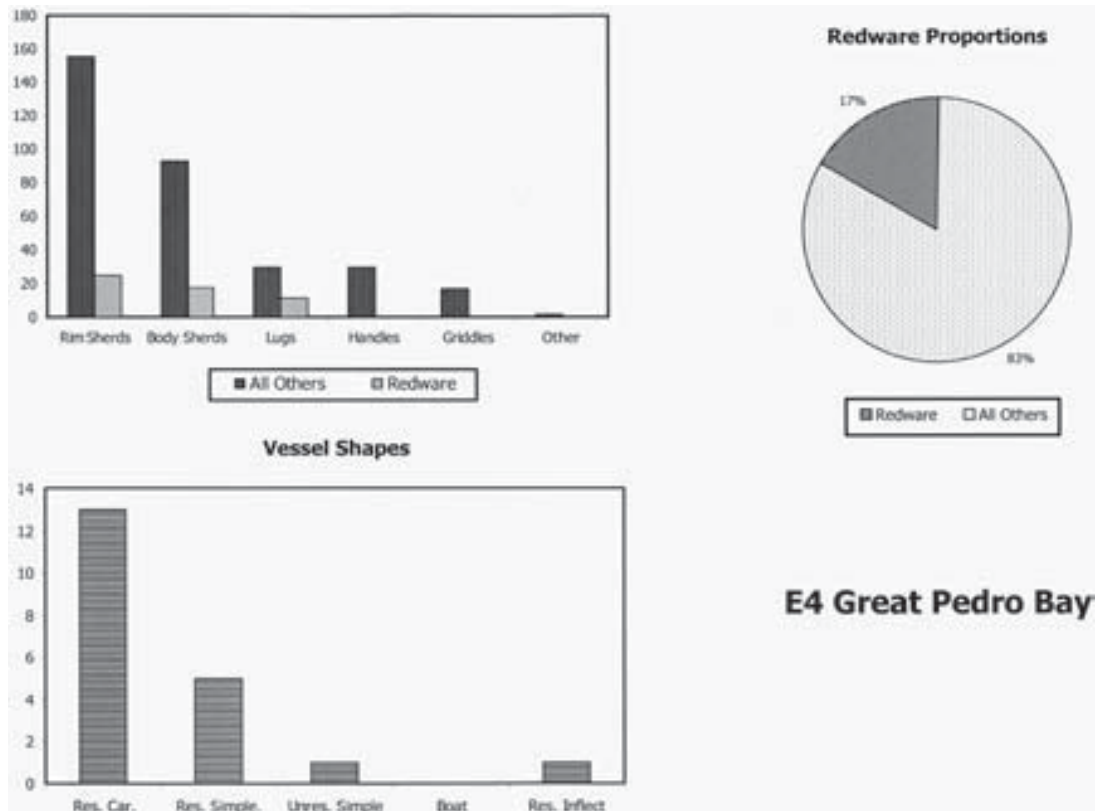


Figure 21. Great Pedro Bay (E4): Pottery characteristics.

1956, 1965). In the light of Howard's remarks, Marian de Wolf reexamined the material she had excavated from Windsor (A19) in 1933, and she decided that this too belonged to the newly defined style (de Wolf 1953). The potsherds were thick, coarse, and heavy. Howard suggested that they came from relatively large vessels, although he had no complete specimen to prove the point. According to him, "the massiveness of the Montego Bay ware allows sufficient space on the rim surfaces to permit decoration" (Howard 1950:145), which was usually in the form of deep, bold incisions. By rim surfaces, Howard evidently meant fillets, or what de Wolf referred to as "reinforced rims" (de Wolf 1953:Figure 85n-o). "Application is often combined with incision to produce zoomorphic forms" (Howard 1965:Figure 1b). As mentioned in Chapter 2, Howard's work was carried on by Vanderwal, his excavations at Fairfield and Hartfield (J1) being particularly important in this context. His "modes" 5 and 6 (incisions on fillets and incisions on the tops of applied clay strips) were determined to be characteristic of the Montego Bay style, or as he termed it, the "Fairfield complex." Both authors suggested, though they were not able to prove it, that the Montego Bay style was relatively late, and that it had probably evolved out of the

predominant White Marl complex. The details of Vanderwal's excavations were not published, but this cannot be said with regard to Cinnamon Hill (J10), excavated by Father Osborne in 1974 (AJ 1976, 1:1–7). The archaeological material from this site was defined as “White Marl with Montego Bay sub-style features.” A plan of the site, with the excavated grid squares, is at Appendix 25. Unfortunately, the depth of deposit seems to have been quite shallow, the excavated material being divided into only two levels of 10 in (25 cm) each. About 5,000 potsherds were recovered. Only 627 rims and decorated pieces were analyzed in detail, and the frequency of certain characteristics was established for the two levels (Appendix 26). An increase in filleted rims and incised decoration in the upper level was noted. A more complete description of the pottery, with suitable line drawings, was promised but did not materialize; hence, it is difficult to provide a more comprehensive characterization of the site.

The work done by Lee permits a much fuller idea to be obtained of the Montego Bay style. He located and mapped 21 middens and one cave, which he regarded as belonging to this cultural variant, to which may be added the site excavated by Keegan at Paradise Park and given the name Sweetwater (Wes 15b) (Keegan et al. 2003). The sites stretch in an arc along the western coasts of Jamaica, from Windsor (A19) in the northeast to Fort Charles (E2) in the southeast, the majority being concentrated in the parishes of St. James and Trelawny. The full list is as follows: Windsor (A19), Cranbrook (A20), New Forest (T1), Braco (T2), Pantrepant (T7), Hampstead (T11), Harmony Hall (T17), Hartfield (J1), Fairfield (J3), Cinnamon Hill (J10), Mount Salem (J11), Salt Spring (J12), Virgin Valley (J14), Spot Valley (J15), Leader Avenue (J16), Tryall #1 (J20), Chew Stick (J21), Point Pen (H8), Duck Pond (W6), Negril Spots (W7), Fort Charles (E2), Abingdon Cave (HC1). It should be pointed out that for many years (J1) was regarded by Lee and others as the equivalent of the Mammee Hill site described by Duerden (1897:16–17) and it was referred to by Vanderwal as such (Vanderwal 1968a:53–55 and Figure 7). In 1983, however, Lee came to the conclusion that Mammee Hill really corresponds to (J20) (AJ 1983, 2:18). The Lee Collection includes at least some material from all the sites, with the exception of Abingdon Cave. In 1966 Lee noted that portions of bowls at this site had become cemented in place by dripstone, and that one still contained human bones (AJ 1966, 7:1). In 1975 “somewhat scarce potsherds” collected in the vicinity “favoured the Montego Bay style” (AJ 1975, 3:1–2). The most abundant material in the collection comes from New Forest (T1), Hartfield (J1), Fairfield (J3), and Windsor (A19). The majority of the sites have relatively little material (< 100 pieces each), but it is not difficult to

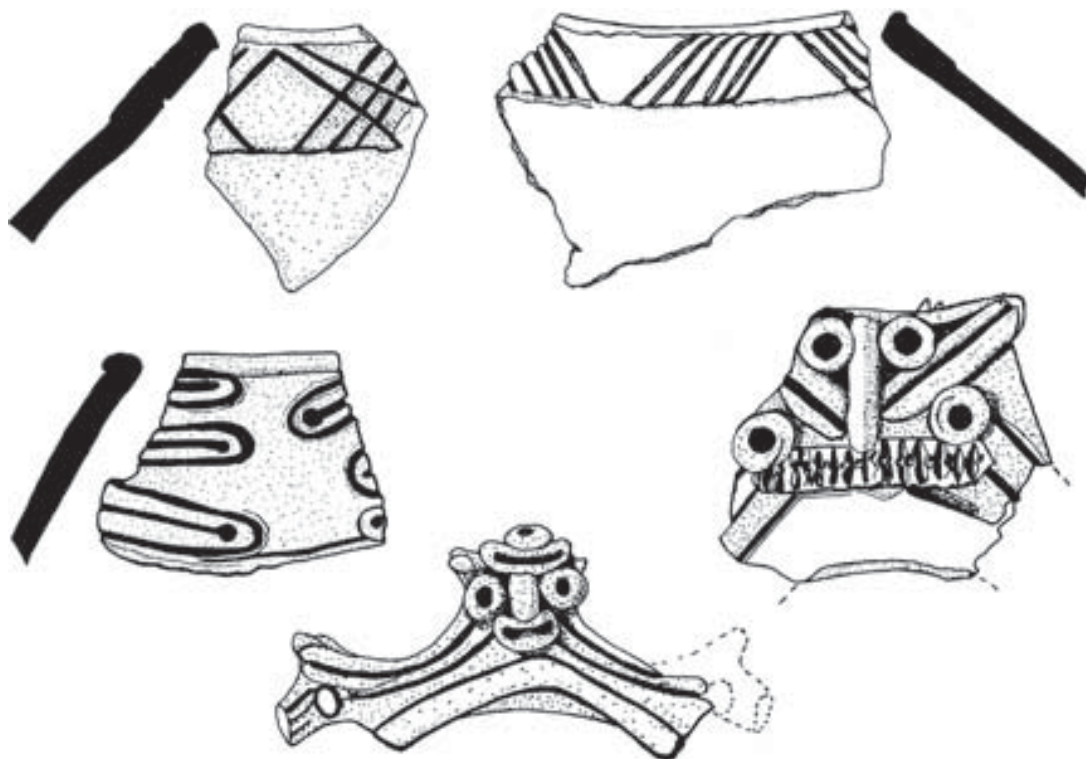


Figure 22. The Montego Bay style (J1, J3, E2).

recognize them as belonging to this variant, because the material when it does appear is quite characteristic. Some typical pieces are illustrated at Figure 22. At top and left are three decorated fillets from (J1) and (J3): the variegated incised designs show cross-hatching, an open alternate-oblique motif, and single lines ending in punctations within oval enclosures. At bottom and right are two anthropomorphic lugs from (J3) and (E2). The combination of incision and applied design is again typical of the Montego Bay style, as is the rather grotesque appearance of the figures. It will be noted that the three decorated fillets as illustrated have profiles indicating that they came from restricted simple vessels (and they would be so recorded), but this impression may be misleading. At Fairfield in 1970 Lee obtained an almost intact bowl filled with marl that is decorated in just this way (AJ 1970, 2:1). It is illustrated in the CD-ROM at j3v1. Referring to this photograph, it can be seen that the complete vessel is restricted carinated in shape. It is 17–18 cm in diameter and 13 cm high. Probably many of the “thick coarse” vessels guessed at by Howard looked like this, hence this vessel shape too may be taken as a leitmotif of the Montego Bay style.

Fairfield (J3) may be taken as an example to show how Montego Bay sites look in terms of total statistics and in terms of the Decorative Techniques

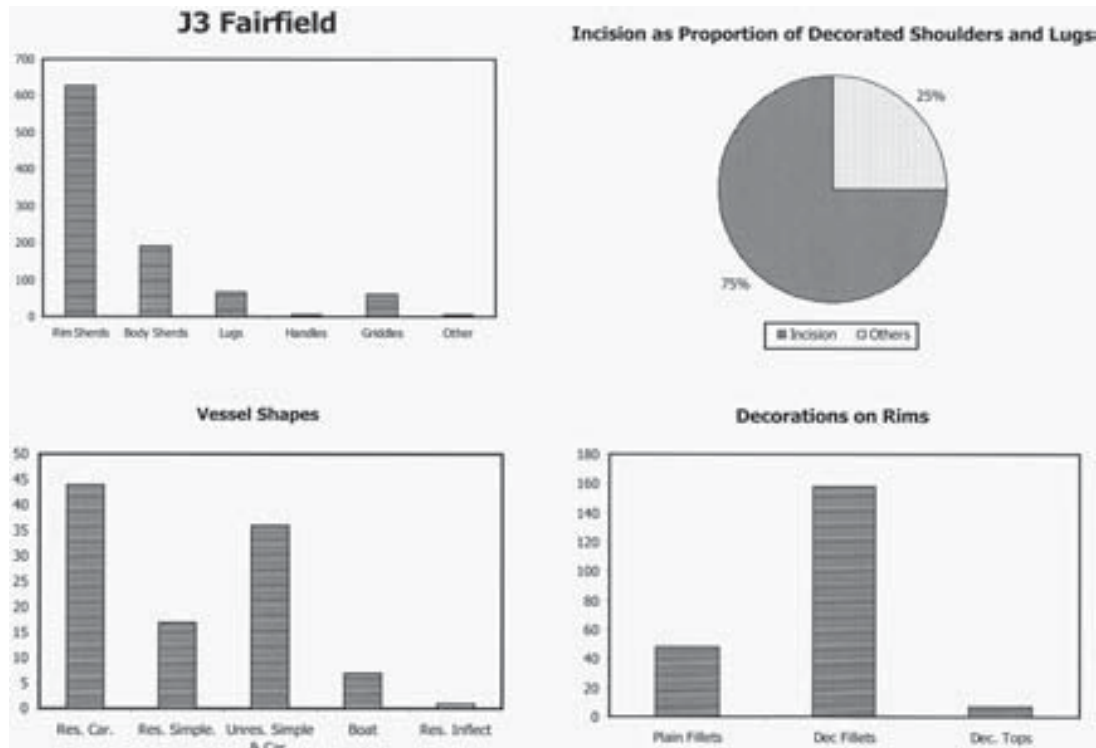


Figure 23. Fairfield (J3): Pottery characteristics.

Table. This is subject to the same caveats as were made in the case of Great Pedro Bay (E4) in relation to the Redware sites. Altogether the collection includes 878 ceramic pieces, one stone celt; 64 chert flakes, tools, cores, and chunks; two other lithic artifacts; and two shell celts. Abundant and well-made chert artifacts (from the Montpelier limestone) are characteristic of almost all the Montego Bay sites. Included in the ceramic pieces, there are 621 rim sherds, 186 body sherds, 68 lugs (both independent and otherwise), two handles, 55 fragments of griddles, and the complete vessel already referred to. The decorated rim sherds included 48 with plain fillets, 157 with decorated fillets, and seven with decorated tops. The importance of decorated fillets is quite clear, and the same characteristic reappears in the other sites that are well represented in the collection. Incision as a proportion of decorated shoulders and lugs accounted for 75 percent, the remainder being taken up by many different combinations of techniques. One hundred four vessel shapes could be reconstructed, including 43 restricted carinate, 17 restricted simple, 36 unrestricted simple and carinate, seven boat shaped, and one restricted inflected. This material is abundantly illustrated in the CD-ROM at the entry for Fairfield (J3. 1–37). The characteristics of the assemblage are also summarized in diagrammatic form at Figure 23. This is arranged in the same way as that for White Marl (S1), to which reference will be made later.

Port Morant

The creation of a separate cultural variant of this name was suggested by Lt. Comm. J. S. Tyndale-Biscoe, following his investigations at Bowden (O9), which he described as “an Arawak kitchen midden with an individuality all its own,” on account of its style of pottery decoration (Tyndale-Biscoe 1960a, 1960b, 1962). The decoration was apparently made with “a square-pointed stick, which was poked into the clay at an angle,” and this decoration was confined to the shoulder of the pot rather than the rim.

There were “two styles, one a single line of punctations, and the other a zigzag.” The Lee Collection unfortunately does not include any material from Bowden, but the two styles do occur at other sites on St. Thomas, and they are illustrated in Figure 24. The zigzag design on the left comes from Braham (O17) and the line of punctations on the right comes from Belvedere #4 (O18). An examination of the material from St. Thomas in the Lee Collection suggests that apart from Bowden seven other sites in the parish may tentatively be compared with it. These sites are as follows: Spanish Wood (Duckenfield) (O2), Creighton Hall (O8), Orange Park (O10), Hillside (O13), Braham (O17), Belvedere #4 (O18), and Green Wall (O12). Vanderwal conducted excavations at Bowden and Spanish Wood, but nothing is known of the results. The material from these sites in the Lee Collection is not very abundant, the most important being Spanish Wood (O2) and Hillside (O13), with 324 and 196 artifacts respectively.

With due caution, Spanish Wood may be taken as an example of this material in terms of total statistics and in terms of the attributes recorded in the Decorative Techniques Table. Altogether the collection includes 297 ceramic pieces; 10 stone celts; 13 chert flakes, tools, and cores; and four other lithics. Included in the ceramic pieces, there are 215 rim sherds, 59 body sherds, 31 lugs (both independent and otherwise), four handles, four fragments of griddles, and one other item. The individuality of the site (and others like it) is shown not so much in the characteristics to which Tyndale-Biscoe drew attention, but in three other very noticeable traits: the comparatively frequent use of impression rather than incision, the relatively common practice of decorating the tops of the rims (rather than the fillets), and the frequent appearance of beveled rims (decorated and plain) on unrestricted simple vessels. These characteristics were reflected in the analysis. The decorated rim sherds include 53 with plain fillets, none with decorated fillets, and 10 with decorated tops. Impression as a proportion of decorated shoulders and lugs accounts for 18 out of 57 at this site,

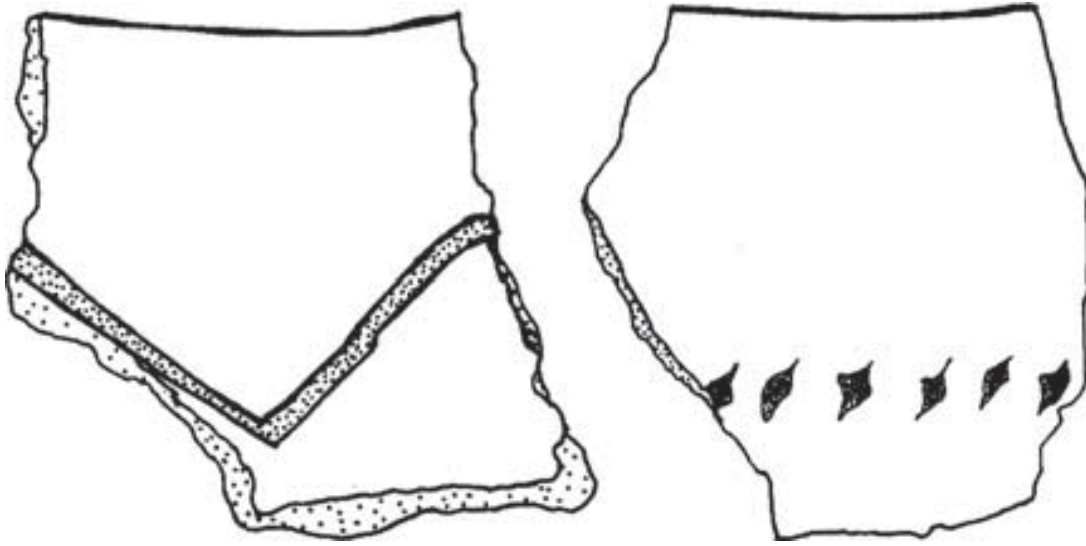


Figure 24. The Port Morant style (O17, O18).

the remaining 39 being mostly incised. Twenty-two vessel shapes could be reconstructed, including 10 restricted carinate, two restricted simple, and 10 unrestricted simple. The material is illustrated in the CD-ROM at the entry for Spanish Wood (O2.1–15). The characteristics of the assemblage are also summarized in diagrammatic form in Figure 25.

It is clear that further investigation is needed to confirm the validity of the Port Morant variant. A detailed study of Vanderwal's material from Spanish Wood and Bowden would be a first step in this direction, and new excavations at these or others of the sites listed by Lee would also be required. But Tyndale-Biscoe's suggestion does have merit, and in the meantime this cultural variant may be regarded as having the same kind of status as Montego Bay.

White Marl

This is the predominant style represented on the island. All the other sites (157 middens and 60 caves) are placed in this group by default, so it may be something of a ragbag, but the group as such is certainly a reality. Howard proposed the term White Marl for it, "since it is at this site that the style appears in its most characteristic and complete form and it is here that its development can be traced over a period of several centuries" (Howard 1965:252). Among other things, Howard noted the following features that defined the pottery, the main constituent in the style (Howard 1950:135–154; 1956:49–54). Incision, application, punctation, and modeling were employed as decorative techniques

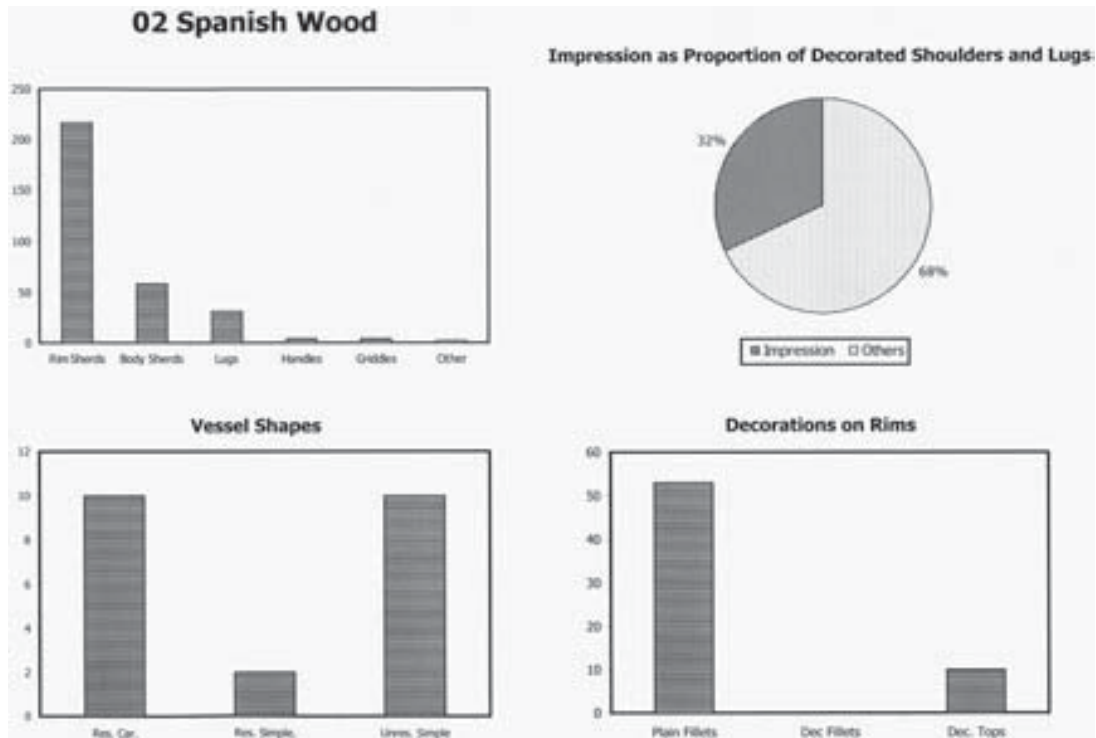


Figure 25. Spanish Wood (O2): Pottery characteristics.

(by modeling, Howard meant lugs or handles with anthropomorphic or zoomorphic representations). Apart from lugs and handles, shoulders provided the “main areas of decoration.” Here incised designs were mainly “groups of alternating, obliquely parallel lines.” “Ridges or fillets were frequently applied along the outer surface of the rim.” The shapes of the pots were predominantly round bowls and boat-shaped vessels. The latter “are oval in outline, viewed from above, and terminate at either end with elevated handles.” All writers have concurred in regarding this style as corresponding to the Meillacan in a broader Caribbean context (Rouse 1992).

The Lee Collection contains material from 120 of the open-air sites and 24 of the caves. The material from the open-air sites is unevenly distributed, in that some excavated locations, for example, Rodney’s House (S5) and Upton (A43), are very poorly represented, or not at all, whereas other collections come from sites that have now been destroyed, for example, Naggo Head (S12). Fortlands (A1) and Round Hill (C1) have > 2,000 artifacts, and Rio Bueno (T5) > 1,000, but other collections are quite small. That does not mean to say that size is the only criterion of importance. Thus, Passley Gardens (P1), mapped by Lee in 1982, contains only 23 ceramics and one net sinker. Nonetheless, it is so

far the only proof that “the Arawaks must have inhabited the Portland coast” (AJ 1982, 1:7). The parishes with the largest number of sites represented in the collection are St. Ann, St. Mary, and Clarendon, which in part is a reflection of the fact that the Montego Bay and Port Morant variants are predominant in St. James and Trelawny, and St. Thomas, respectively, and there are many Redware sites in St. Elizabeth.

The collection from White Marl (S1) may be taken as representative in terms of total statistics and in terms of the Decorative Techniques Table, subject to the same provisos as were made previously. Altogether the collection includes 735 ceramic pieces, three stone celts, one chert flake, and three other lithics, as well as a little historic material. There are also two complete vessels, which serve to illustrate the basic shapes mentioned by Howard: a round restricted carinate bowl (illustrated at s1v1) and a simple boat-shaped vessel with a plain filleted rim (illustrated at s1v2). Included in the ceramic pieces, there are 438 rim sherds, 252 body sherds, 104 lugs (both independent and otherwise), three handles, 18 fragments of griddles, and two other ceramics. The decorated rim sherds include 122 with plain fillets, two with decorated fillets, and eight with decorated tops. Incision as a proportion of decorated shoulders and lugs accounts for 87 percent. One hundred sixty-nine vessel shapes could be reconstructed, including 116 restricted carinate, 35 restricted simple, seven unrestricted simple, 10 boat shaped, and one restricted inflected. The material is illustrated in the CD-ROM at the entry for White Marl (S1.1–25). The characteristics of the assemblage are also summarized in diagrammatic form in Figure 26. This may be compared with Figure 23 for Fairfield (J3). The difference of emphasis between the two in terms of decorations on rims, vessel shapes, and incision as a proportion of decorated shoulders and lugs, is clear, even when allowance is made for the fact that none of this is excavated material.

Included in the 24 caves that contain material forming part of the Lee Collection are three of the four remarkable locations described in Chapter 2: Spot Valley Cave (JC7), Taylor’s Hut (CC15), and Belle Air (AC4) (the fourth, Bull Savannah #2, being listed at least provisionally as a Redware site). These three caves contain no less than 16 complete vessels (illustrated at jc7v1, cc15v1–11, and ac4v1–4). As mentioned already, this compares with a total of 36 such vessels in the collection. One more comes from a cave (High Dome Cave CC8) but the remaining 19 are from open-air sites, in particular from Round Hill (C1) with eight vessels (illustrated at c1v1–8). Spot Valley Cave also contained the remains of a massive water jar (illustrated at JC7.7) and Taylor’s Hut pro-

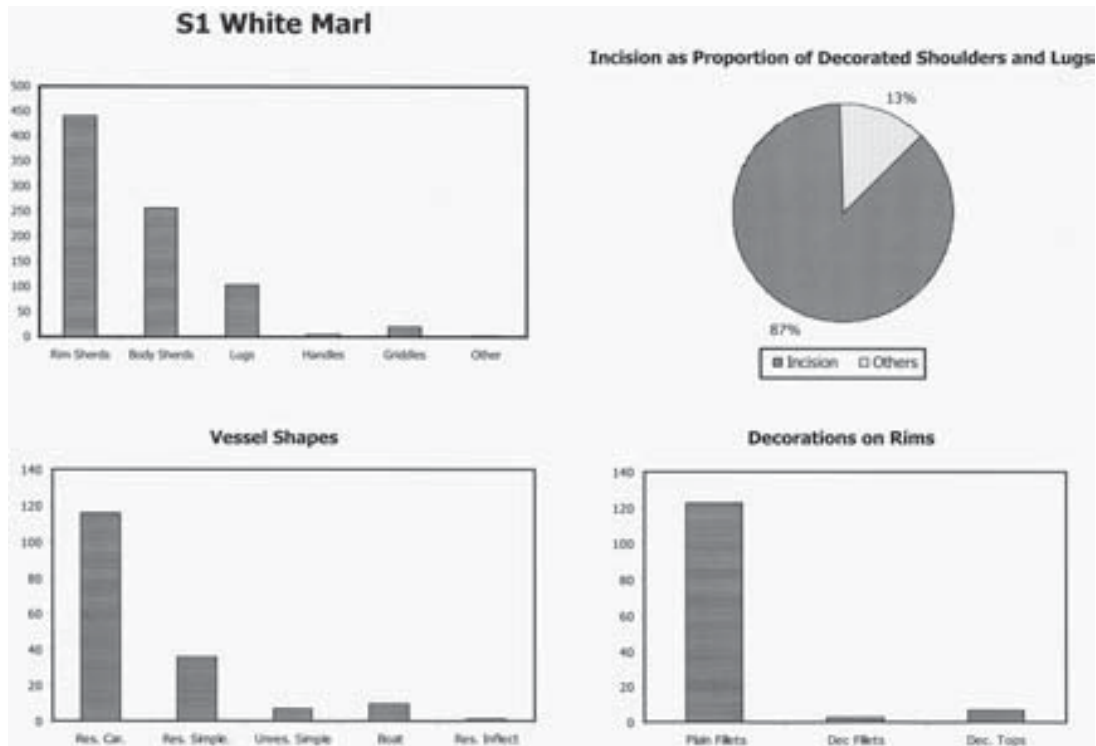


Figure 26. White Marl (S1): Pottery characteristics.

duced two remarkably complete reconstructed griddles (illustrated at CC15.2 and 3). Not including the complete vessels, the three caves produced a total of 693, 38, and 73 potsherds and a few lithic artifacts. Apart from these three, the most remarkable cave with material in the collection probably is Image Cave (MC3), which was mapped by Lee in 1966 (AJ 1966, 11:1 and 1967, 5:2). The most notable artifact found here was “a crudely whittled hardwood spindle which may be of Arawak manufacture and which would have been used for spinning cotton” (AJ 1966, 11:1), now housed at the Institute of Jamaica (Appendix 29). Lee thought it possible that this might be the same cave as “Spots,” where Rebello’s famous carved wooden “images” were found in 1792. The remainder of the caves do not contain a great deal of material, except for New Mountain Cave (WC3), which has 254 ceramic pieces. The majority is in St. Elizabeth parish. Once again, there is unevenness in distribution, and some important caves, for example, White Marl Cave #1 (SC5) are entirely absent (St. Clair 1970).

In summing up the pottery, which formed the main element in his White Marl style, Howard concluded that it was in general “remarkably homogeneous,” constituting “a relatively undifferentiated and conservative tradition”

(Howard 1950:155). But he admitted that without “careful, large scale, stratigraphic excavations,” the “undoubted regional and temporal differences” which existed in Jamaica could not be “established accurately.” That remains true today.

“Hispanic-Indian”

The presence of “syncretic Hispanic-Indian” ware indicative of coexistence between the Spaniards and the native inhabitants has been demonstrated at New Seville, as mentioned in Chapter 2. Following the discovery of carved stones in a well, Captain Cotter excavated the former Spanish governor’s castle or fort between 1953 and 1968 (Cotter 1948, 1956, 1970). The site and the fort are illustrated at Appendixes 51 and 52. Cotter’s collection has been restudied by Robyn Woodward (1988, 2006). It includes 32 sherds and seven vessels that are regarded as syncretic (Appendix 53). These products “combined Old World ceramic forms with New World ceramic technology” (Woodward 1988:111), the assumption being that native artisans were put to work to produce some vessels that corresponded to Spanish tastes. Illustrations of some of the identified wares are at Appendixes 54–56. So far, however, this is the unique case of “Hispanic-Indian” coexistence recorded archaeologically on the island, no such evidence having yet come to light at the second Spanish capital, Villa de la Vega (Mathewson 1972a, 1972b).

Chronology

At the moment, the chronology of Pre-Columbian Jamaica is founded upon radiocarbon dates. Such dates exist for six of the White Marl or Montego Bay sites reported here: White Marl (S1), Bengal (A8), Cinnamon Hill (J10), Chancery Hall (K11), Aboukir, and Sweetwater (Wes15b). In addition there are two dates for the Redware sites of Bottom Bay (M4) and Paradise (Wes15a). Details concerning the stratigraphic provenance of the dates are given in the list (Appendix A) of excavated sites, and the uncalibrated dates themselves are quoted there.

By far the most abundant series of dates comes from White Marl, as listed by Silverberg and colleagues (1972). Three dates were quoted for Howard’s middens 2 and 3, and four each for his trenches A and B (Silverberg et al. 1972:

Figure 6). The authors commented however that two of these dates did not fit the sequence on stratigraphic grounds. Y-1119, 40–50 in below the surface of midden 3, was “so recent as to suggest contamination,” and Y-1755 for burial 2 in trench B was also considered to be “too recent.” If, to be on the safe side, these dates are excluded, that leaves a total of nine dates from this site. Charcoal from Father Osborne’s excavations at Bengal produced a radiocarbon date that is quoted by Vanderwal (1968a:136) although it is not known from where exactly it came. Three dates were likewise obtained from Father Osborne’s excavations at Cinnamon Hill (AJ 1981, 2:8) but once again there is a contradiction between the date for the burial and the date on charcoal from the same level, and it seems prudent not to rely on the date for the burial. A charcoal sample from Chancery Hall was obtained by G. P. Lechler at the boundary between lots 340 and 339 (Lechler 2000) and the date on charcoal from Sweetwater is as quoted by Keegan and colleagues (2003). As mentioned in Chapter 2, there are two radiocarbon dates for the male figure and the bird figure recovered from Aboukir in 1992. These dates, accelerator mass spectrometry (AMS) determinations on the wood of the figures themselves, were obtained by Marijn Manuels on behalf of the National Gallery of Jamaica (Manuels 2001). The seven further dates judged to be reliable from sites other than White Marl brings the grand total to 16. With regard to the Redware sites, a radiocarbon date on charcoal from Bottom Bay was obtained by Vanderwal thanks to his excavations there in 1966 (AJ 1967, 8:3) and the date on shell from Paradise is again as quoted by Keegan and colleagues (2003).

The 16 dates for White Marl and comparable sites are set out in Table 6. The laboratory number (where known) is listed on the left followed by the age in radiocarbon years B.P. (before present) expressed as a mean and standard deviation. It is known now however that these dates cannot be simply translated into A.D. equivalents by subtracting them from 1950 (the radiocarbon conventional present) since radiocarbon years and calendar years are not exactly the same. Various calibration programs exist for the conversion of one to the other. The radiocarbon calibration program used here is the one devised by M. Stuiver and P. J. Reimer and is CALIB version 4.4. The equivalents for these radiocarbon dates using this program were worked out by Kit Wesler, and thanks go to him for this. In this CALIB version, the dates are expressed as ranges (rather than simple intercepts) with probability estimates attached. Probabilities can be expressed either as one or two standard deviations. The decision has been taken here to use one standard deviation and to make sure that the relative area under the probability distribution is always high. The calibrated range is given

Table 6. Sixteen Radiocarbon Dates and Calibrated Date Ranges for White Marl and Related Sites.

Site	lab number	age in radiocarbon years	cal lower limit A.D.	cal upper limit A.D.	median
White Marl	Y-1117	1016 ± 95 B.P.	956	1130	A.D. 1043
White Marl	Y-1118	1073 ± 95 B.P.	859	1038	A.D. 948.5
White Marl	Y-1750	460 ± 120 B.P.	1393	1525	A.D. 1459
White Marl	Y-1751	760 ± 60 B.P.	1219	1293	A.D. 1256
White Marl	Y-1753	650 ± 60 B.P.	1291	1392	A.D. 1341.5
White Marl	Y-1754	720 ± 60 B.P.	1239	1304	A.D. 1271.5
White Marl	Y-1785	650 ± 60 B.P.	1291	1392	A.D. 1341.5
White Marl	Y-1784	780 ± 60 B.P.	1210	1288	A.D. 1249
White Marl	Y-1786	800 ± 80 B.P.	1159	1291	A.D. 1225
Bengal	IVIC-190	770 ± 100 B.P.	1158	1304	A.D. 1231
Cinnamon Hill		625 ± 195 B.P.	1162	1488	A.D. 1325
Cinnamon Hill		935 ± 180 B.P.	975	1275	A.D. 1125
Chancery Hall	Beta-53703	690 ± 50 B.P.	1276	1387	A.D. 1331.5
Aboukir	Beta-153379	820 ± 40 B.P.	1207	1265	A.D. 1236
Aboukir	Beta-153380	670 ± 40 B.P.	1284	1387	A.D. 1335.5
Paradise Park	Beta-125833	490 ± 60 B.P.	1397	1470	A.D. 1433.5

as lower and upper limits in the next two columns from the left. Thus, the first calibrated date is Y-1117, which has an age in radiocarbon years of 1016 ± 95 B.P.. The calibrated range at one standard deviation is A.D. 956–1130, a measurement that ensures that .804 of the area under the probability distribution is covered. The final calculation on the right-hand side gives the median point of this range, which in this case is A.D. 1043. This calculation is not part of the CALIB procedure, but has been introduced here for comparative purposes, as explained below. It will be noted that the median date for Y-1117 is younger than the date that would be obtained by a direct conversion from the radiocarbon date itself, which would work out at A.D. 934. This tendency for the calibrated dates to be younger than the converted radiocarbon dates is common to all the dates quoted here, and would apply no matter what calibration program was used, since this is what this part of the calibration curve (in the years A.D.) looks like. The difference is not drastic, but at this time scale it is important.

Table 7. Fourteen Radiocarbon Dates and Calibrated Date Ranges for Green Castle and Related Sites.

Site	lab number	age in radiocarbon years	cal lower limit A.D.	cal upper limit A.D.	median
Green Castle	Beta-158967	750 ± 60 B.P.	1221	1296	A.D. 1258.5
Green Castle	Beta-158968	480 ± 80 B.P.	1392	1492	A.D. 1442
Green Castle	Beta-158969	660 ± 40 B.P.	1290	1388	A.D. 1339
Green Castle	Beta-134379	330 ± 60 B.P.	1488	1603	A.D. 1545.5
Green Castle	Beta-158966	430 ± 80 B.P.	1415	1523	A.D. 1469
Green Castle	Beta-158963	760 ± 60 B.P.	1219	1293	A.D. 1256
Green Castle	Beta-158964	920 ± 60 B.P.	1034	1163	A.D. 1098.5
Green Castle	Beta-158965	820 ± 60 B.P.	1180	1276	A.D. 1228
Wentworth	Beta-167740	680 ± 60 B.P.	1279	1389	A.D. 1334
Newry	Beta-170433	850 ± 60 B.P.	1157	1261	A.D. 1209
Newry	Beta-170434	1020 ± 60 B.P.	963	1118	A.D. 1040.5
Newry	Beta-170435	950 ± 60 B.P.	1023	1158	A.D. 1090.5
Newry	Beta-170436	1040 ± 40 B.P.	976	1025	A.D. 1000.5
Coleraine	Beta-182412	790 ± 70 B.P.	1186	1288	A.D. 1237

It is instructive to compare these dates with those obtained for sites in the Annotto Bay area as part of the UWI–Murray State University project mentioned in Chapter 2 (Allsworth-Jones and Wesler 2003). This project encompasses Green Castle (Y25), Newry (Y27), Coleraine (Y19), and Wentworth (Y8), which is somewhat farther to the west. The results are set out in Table 7, which has been drawn up in the same manner as discussed above. There are 14 calibrated dates all told, eight of them being from Green Castle. One of the Green Castle results (Beta-134378) and three of those from Coleraine (Beta-182409–11) have been excluded as evidently contaminated. Broadly speaking, the results are similar, but the information from the two sets of data as a whole can be explicitly compared making use of the median dates already mentioned.

The method chosen has been to employ age dispersion diagrams along the lines of those originally proposed by Ottaway (1973) except that now calibrated medians rather than radiocarbon dates are used. In this method, the range, the median, and the interquartile range of the dates under consideration

Table 8. Calibrated Age Dispersion Figures for Annotto Bay and White Marl.

	lower range	lower interquartile	median	upper interquartile	upper range
White Marl	948.5	1228	1264	1338.5	1459
Annotto Bay	1000.5	1098.5	1246.5	1339	1545.5

are all employed to give an overall impression of where the weight of the data lies. Setting the median dates for the two data sets out in order, the following comparison, seen in Table 8, can be achieved for the White Marl set and the Annotto Bay set respectively.

The results are set out in diagrammatic form in Figure 27. It can be seen that the Annotto Bay set starts and finishes somewhat later than the White Marl set. The medians are very close, but there is a much tighter interquartile range for the White Marl set: 110.5 years as distinct from 240.5 in the case of Annotto Bay.

The published radiocarbon date for Bottom Bay is Y-1987 1300 ± 120 B.P., whereas the measured radiocarbon date for Paradise (Wes15a) is Beta-125832 1180 ± 60 B.P.. Using the CALIB program version 4.4 as above, the calibrated ranges for these two dates are respectively A.D. 645–879 and A.D. 777–898. (Using a different calibration program, the latter date range has been published at two standard deviations as A.D. 710–990; Keegan et al. 2003.) It has commonly been asserted that the first occupation of Jamaica goes back to A.D. 650 on the basis of a direct conversion of the result from Bottom Bay (Lee 1980). More samples and greater precision are required in relation to the Redware occupation of Jamaica, but for the moment (even with the calibrated results as they are) one can say that there still appears to be a chronological gap between this occupation and the beginning of the White Marl phase, as Lee suggested.

Summary

The 265 sites recorded in the Lee Collection may be divided into four cultural variants and by type of site, as shown in Table 9.

To these may be added the two new sites excavated at Paradise Park, one of which is attributed to the Redware and the other to the Montego Bay variant. Aboukir, like the majority of the caves, is regarded as belonging to the White

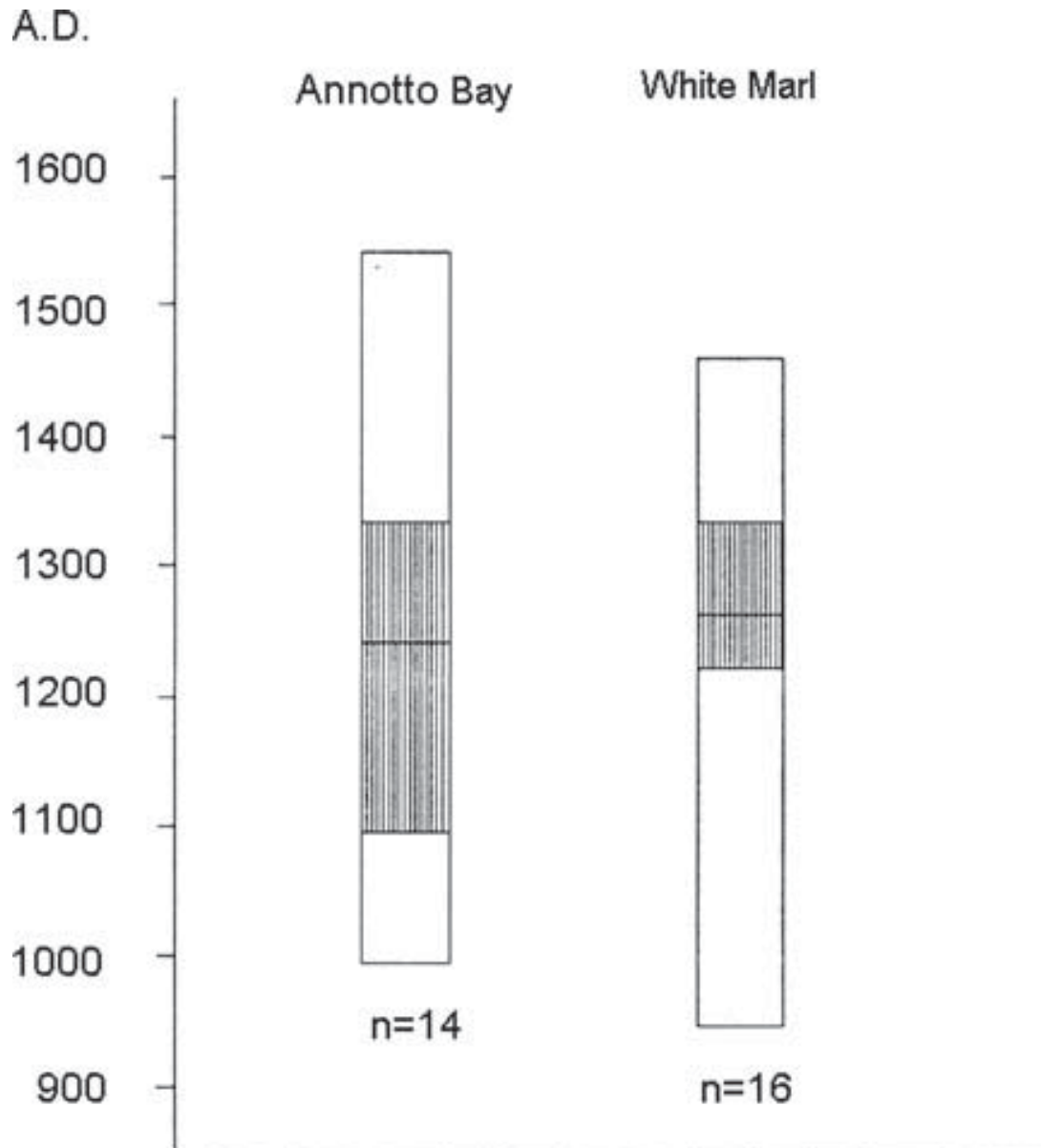


Figure 27. Calibrated ^{14}C age dispersion diagram: Annotto Bay and White Marl.

Marl variant. New Seville is so far the unique site to have produced syncretic “Hispanic-Indian” ware. The recorded Redware sites all have at least some material included in the collection, as do the Montego Bay and Port Morant sites, except for one absentee in each case. But, the collection includes material from only 120 middens and 24 caves attributed to the White Marl variant.

In general, the inventory of finds in the Lee Collection is somewhat uneven, some well-known sites being poorly represented or altogether absent. But it is still remarkable and informative, including material from some sites that have been destroyed, and practically complete assemblages from a small number of

Table 9. Jamaican Sites Categorized by Cultural Variant and Type.

	open-air sites	caves
Redware	15	3
Montego Bay	21	1
Port Morant	8	0
White Marl	157	60

caves that are of great significance. Diagrams have been presented to illustrate some stylistic features of the assemblages attributed to the different cultural variants, designed to emphasize those characteristics that may be regarded as particularly diagnostic or distinctive.

In terms of chronology, the White Marl and Montego Bay variants extend from about A.D. 950 to 1545, as measured by the available calibrated medians, which total 30 from 10 sites. The two Redware calibrated ranges extend as a maximum from about A.D. 645 to 900, but clearly more information is needed on that point. More information is also needed on the cultural variants themselves, and this can only be obtained by careful excavation and publication of the results. They also need to be considered in relation to the environmental factors pertaining at the sites, and not treated in isolation, as somehow autonomously existing entities, which up to now has tended to be the case.

8 / Petroglyphs and Pictographs

In his final account of Jamaica's decorated caves, James Lee (1990) listed 24 such sites he had mapped on the island: 21 with petroglyphs alone, two with both petroglyphs and pictographs, and one with pictographs alone. He had earlier defined a petroglyph as a "rock carving executed either on a rock outcrop or on a boulder of such size that it is obvious that the carving was done in situ," that is, these were not and had never been portable objects (AJ 1974, 4:1–4). Pictographs were executed by painting rather than by incision. It should be noted that other writers have suggested that both should be regarded as "lithographs" (Roe 1991a), and indeed they share many features in common. The sites, listed by parish, are as follows. Unless otherwise stated, they have petroglyphs alone. Coventry (AC1), Milk River (CC1), Jackson Bay (CC2), Jackson Bay East (CC6), God's Well Junction #2 (CC10), Little Miller's Bay (CC18), Duff House (EC11), Warminster (EC15), Redbank (EC16), Reynold Bent (EC19), Kempshot (JC1), Spot Valley Cave (JC7) (pictographs only), Canoe Valley (MC1), Cuckold Point Cave (MC5), Gut River #1 (MC6), Mountain River Cave (SC1) (petroglyphs and pictographs), River Head (Byndloss Mt.) (SC2), Worthy Park #1 (SC6) (petroglyphs and pictographs), Two Sisters Cave (SC7), Worthy Park #2 (SC10), Pantrepant West (TC1), Pantrepant East (TC2), Negril Cave (WC2), and Dryland (YC1). In addition, Lee mentioned four other sites he had been unable to find. One of them, Windsor (TC4), has subsequently been located by Ivor Conolley, to whom thanks go for this information. Originally noted by A. D. Lacaille in 1925, the petroglyph here is in fact at the upper entrance to Windsor Great Cave, and consists of a carving on

a stalagmite that stands in a sentinel-like position at this point. Then, in 1993, an important site with pictographs only was located at Potoo Hole, in the area of Jackson's Bay (Fincham 1997; Fincham and Fincham 1998). It has been included here as CC22, giving us a total of 26 mapped sites in all. Unfortunately, as Lee stated, seven of the petroglyph sites known to him had been "seriously defaced, erased, or removed." The CD-ROM includes as Appendix 14 images relating to these sites. Most but not all have been taken from Lee's final account mentioned above. This is not an exhaustive record, but it is valuable, particularly insofar as it relates to those petroglyphs that are no longer extant.

Context

The rock carvings and paintings in Jamaica were produced exclusively in the "White Marl period," in Lee's view. He felt "fairly clear" or "reasonably sure" about this on two grounds, first because of the occurrence of White Marl ceramics at or near certain of the sites, and second because of their spatial distribution. Those sites closely associated with White Marl ceramics were said to include Jackson Bay (CC2), Duff House (EC11), Spot Valley Cave (JC7), Cuckold Point Cave (MC5), Mountain River Cave (SC1), Worthy Park #1 (SC6), and Pantrepant East (TC2). By far the most abundant of these occurrences is Spot Valley Cave. The Lee Collection includes 693 potsherds, apart from the bowl he reconstructed (jc7v1), as well as a few pieces of chert. In addition, this cave was clearly used for burial purposes, with the remains of at least eight individuals. With regard to the spatial distribution of the 24 petroglyphs and pictographs he mapped, Lee pointed out that "White Marl type villages" were the "nearest occupation sites in every case," and he demonstrated this by providing a table of distances between them (Lee 1990:Table 2). The distances concerned range from .20 to 9.45 km, with a typically skewed distribution, as can be seen by grouping the sites in 2-km intervals as follows.

0–2 km: 8, 2–4 km: 6, 4–6 km: 4, 6–8 km: 2, 8–10 km: 4

The median distance between the sites is 3.20 km, and the mean distance is 3.96 km, with a standard deviation of 2.95.

There are three radiocarbon dates for two of the sites, quoted in Fincham (1997:13, 296). At Jackson Bay (CC2), D. A. McFarlane reported a date on a human bone fragment of 710 ± 60 B.P. (A.D. 1240 ± 60 uncalibrated) and on a marine shell of 795 ± 70 B.P. (A.D. 1155 ± 70 uncalibrated). The latter is said to

have been excavated from below a 2-m-deep deposit of fossil bat guano in an entrance chamber. At Potoo Hole (CC22) “surface fossil guano” was dated to 950 ± 50 B.P. (A.D. 1000 ± 50 uncalibrated). Obviously no definite relationship can be established between these dates and the petroglyphs or pictographs, and therefore they are of uncertain relevance. But the age range is not incompatible with that suggested by Roe for the petroglyphs and pictographs in Puerto Rico at Maisabel, Caguana, and the Cueva de La Mora (Roe 1991a, 1991b, 1999).

Nature of the Images

The 24 sites mapped by Lee include several where only one glyph was observed. Others have one “principal carving” and “a few smaller or less well done efforts.” Then there are “clusters.” The one best known to him, and painfully recollected because it had been destroyed, was Canoe Valley (MC1), which did possess about 30 images (Appendixes 12, 13, 14, 15). Other multiple glyphs were reported from Jackson Bay (CC2), Warminster (EC15), and Kempshot (JC1). Worthy Park #1 (SC6) was said to contain two “very minor” pictographs as well as some petroglyphs. Elsewhere, the pictographs are always multiple, at Spot Valley Cave (JC7), Mountain River Cave (SC1), and Potoo Hole (CC22). Thus, according to Lee, at Spot Valley Cave there were about a dozen poorly preserved pictographs, applied to the cave wall in black pigment, in the same style as those at Mountain River Cave. They were partly obscured by dirt, dust, or smoke. His illustration is at Appendix 41. It is not too clear what these figures represent, but as so often they seem to have both zoomorphic and anthropomorphic characteristics.

By far the most common petroglyph motif, as Lee put it, is a simple oval face, incised by a continuous line, with three circular or oval depressions to represent eyes and mouth. Four such faces are illustrated from Coventry (AC1) (Appendix 17). One such figure, from Pantrepant East (TC2), has long been known, since it was first illustrated by Duerden (1897:Figure XVII) (Appendix 21). The “sloping narrow eyes” on one of the heads from God’s Well Junction #2 (CC10) (Appendix 37) were compared with the “mask motifs” found on some pottery handles. One of the three illustrated heads from Gut River #1 (MC6) is “heart-shaped” (Appendix 38), whereas the one from Cuckold Point Cave (MC5) has tear lines streaming from the eyes (Appendix 36). The figures from Milk River (CC1) are somewhat enigmatic (Appendix 39), and it might be thought that the same goes for the figure from Reynold Bent (EC19) (Appendix 40). Lee thought that the “haloes” around this head might represent “hair or

head dress,” but international comparisons suggest that in this case, as in others, we might be able to be more specific about their symbolic meanings.

The images shown in the pictographs have, until recently at least, appeared more varied than in the case of the petroglyphs. At Mountain River Cave (SC1), the designs were executed in black on the ceiling. Watson (1988) was able to identify 148 pictographs altogether, of which 61 were zoomorphic, 84 were anthropomorphic, and three abstract. Recognizable figures include birds, tree frogs, turtles, and reptiles variously identified as lizards, crocodiles, or iguanas. At Potoo Hole (CC22), the pictographs appear along two walls at the base of a vertical shaft. A preliminary analysis by A. G. and A. M. Fincham (1998) has revealed the presence of at least 46 pictographs: 18 zoomorphic, seven anthropomorphic, eight geometric, and 13 undefined. The zoomorphic images include probable turtles, crocodiles, iguanas, and fish. For the most part they were executed in red ocher and/or a blackish pigment (possibly charcoal based). The images are in general strikingly similar to those from Mountain River Cave. There are other parallels as well. One of the striking scenes at Mountain River Cave shows two men in bird masks facing each other and holding spears or throwing sticks. Lee considered that this represented a hunting scene for aquatic birds, but in Aarons's view (1988) it had a wider religious or ceremonial significance. As he pointed out, the most outstanding Jamaican example of a human bird headed motif is one of the three wooden figures found at Spots in Carpenter's Mountain in 1792 (Appendix 44), a locality that in Lee's view may well be identical with Image Cave (MC3). This parallel reinforces a point made by Roe (1991a, 1991b, 1999) in relation to the prehistoric art forms of Puerto Rico. He maintains that lithographs were only one form of “spiritual house” for the multitudinous spirits who formed part of the Taíno world. Other vehicles for the same spirits were wood sculptures, cotton figures, and carved stone portable images. In fact, he goes so far as to say that the “paramount medium” for the Taíno was woodcarving, followed by carving in bone and shell. Hence we should treat all these images as forming part of a unity, including the other two from Spots, and the three wooden figures found at Aboukir (AC5) (Aarons 1994; Saunders and Gray 1996): at Spots, a male figure probably representing Boinayel the Rain Giver (Appendix 45) and another probable male figure forming part of a *cohoba* stand (Appendix 46); at Aboukir, a male figure probably representing Baibrama (Appendix 48), a bird figure forming part of a *cohoba* stand (Appendix 49), and a spoon or scoop with a handle probably representing Maquetaurie Guayaba, the lord of the underworld (Appendix 50).

Another point about Mountain River Cave relates to the petroglyphs, which

tend in recent discussion to have been overshadowed by the pictographs, but which were in fact of paramount importance to Duerden, who first published them (Duerden 1897:Plate VII, Figures 1 and 2). What he described as the “principal figure” was executed on a “projecting piece of rock” (Appendix 18). According to his description, “the eyes and mouth are represented, and the face is surrounded by two parallel three-sided incisions, producing somewhat the appearance of a thick hood. The outer incision is continued below, giving to the whole the resemblance of a shrouded human body.” Although they cannot be seen too well in this photograph, there are two other similar figures on either side of the “principal” one. Duerden also wrote, “A fallen piece of rock, measuring about four feet cube, lies upon the ground nearby, and bears similar carvings, but the figures are not so complete” (Appendix 19). This rock may not be easily visible today, but there definitely are parallels for these “shrouded human bodies” (in Duerden’s prescient phrase) elsewhere in the Caribbean.

Caribbean Comparisons

The comparisons suggested here are based on Roe’s work at the Puerto Rican sites (Roe 1991a, 1991b, 1999; cf. Siegel 2005). They relate both to the interpretation of individual figures and the placement of these figures within a broader conceptual framework. The interpretation of individual figures is assisted by his practice of breaking them down into their component parts, and his acceptance of the idea of cross-media isomorphisms, such as suggested by Lee for the “slit-eyed” head from God’s Well Junction #2 (CC10). The most telling parallel suggested by Roe is between the Long Beaked Bird at Caguana (petroglyph 7) and the triangular and roundel designs popular on Chicoid bowls (Roe 1991b:Figures 7 and 8). Among the anthropomorphic lithograph components distinguished by Roe, which also turn up in a Jamaican context, it is worth drawing attention to the goggle eyes, the diadems, and the hairlines, among others (Roe 1991a:Figures 18, 21, and 23). The “pointed” hairline design gives rise to a heart-shaped face such as that illustrated by Lee from Gut River #1 (MC6). Roe illustrates similar examples from Caguana and the Cueva de La Mora (Roe 1991b:Figures 3, 5, and 6; 1999:Figures 7d and 10a). Diadem is the term used by Roe for the halo noted by Lee at Reynold Bent (EC19). Alternatively this is referred to as a headdress or a crown, as shown most strikingly at El Bronce (Roe 1991a:Figure 14) but also at Caguana and the Cueva de La Mora (Roe 1991b:Figures 3 and 6; 1999:Figures 10a, 29b, and 37). In Roe’s opinion, this accoutrement may have had a broader sociological signifi-

cance. If we accept that simple faces (the shared physiognomy of everybody) signaled “relatively egalitarian social relations,” then accessories denote hierarchy, since they “invidiously divide people via sumptuary codes.” Goggle eyes appear clearly at the top of the figure to the right hand of the “principal” one at Mountain River Cave, and they also feature largely in the Puerto Rican images described by Roe (1991a:Figure 7A-4; 1991b:Figure 3b; 1999:Figure 28c). But goggle eyes are not exclusively or even mainly associated with anthropomorphic images. From the Cueva de La Mora, Roe illustrates an arresting pictograph of a goggle-eyed owl (Roe 1999:Figure 26e). This is the Múcaro owl, a bird of evil omen even today in Puerto Rico. It is believed that it announces, by its eerie cry, that someone will die. The goggle eyes as used in general are therefore linked with this herald of the dead.

There is an evident ambiguity in some of the images at Mountain River Cave and at Potoo Hole in respect of their animal or human nature. This ambiguity is abundantly reflected in the images discussed by Roe, particularly the famous Frog Lady of Caguana (Roe 1991b:Figures 1 and 3a) who may also have represented the Taíno earth goddess Atabeyra. His most striking images however relate to what he calls the “wrapped ancestors.” Again, the most arresting of these occur in the same panel as the goggle-eyed owl at the Cueva de La Mora (Roe 1999:Figure 26a, b, c). The ancestors are shown as human figures, with the usual kind of face, but also with lozenge-shaped bodies and no limbs. The bundles formed by the bodies may carry markings of various kinds. They represent the dead wrapped in hammocks, “revered-but-feared” spirits. The parallel with the “shrouded human bodies” detected by Duerden is absolutely clear. His figures belong in that universe. As Roe explains, Taíno shamans used caves as portals to the other world, and they communicated with the ancestors as intermediaries. These figures obviously were crucial to that process.

Roe made the final point that petroglyphs have for too long been treated as isolated “statements” in prehistoric art. In certain contexts they may be spatially related, “verbal art made stone.” He argues that case at Caguana, where he maintains that the Frog Lady and the Long Beaked Bird are elements in an Amazonian tale of creation. At the Cueva de La Mora, there is a deliberate placing of petroglyphs and pictographs at different points of the system, the petroglyphs being the guardians of the outer portals and the pictographs being the cult images at the center. In the light of this observation, it was clear that, in the few cases in Jamaica where large panels were reported, it would be well worthwhile looking out for similar nonrandom designs. An opportunity to do so was provided by recent work carried out at Warminster cave (EC15).

Warminster Cave

A visit to this site in April 2003 revealed that it certainly merited James Lee's description as "the largest and best remaining group of petroglyphs in Jamaica," but also that it had been damaged through the daubing of red paint upon some of the images. With the cooperation of Alumina Partners of Jamaica (ALPART), work was undertaken to remove the paint and restore and record the images in July 2005. This work was done with the expert advice and guidance of Johannes Loubser, and the results were presented to the SAA (Society for American Archaeology) meeting in San Juan in April 2006 (Loubser and Allsworth-Jones, in press). The cave, formed by the collapse of a large boulder in front of a limestone outcrop, measures about 10 x 6 m. Ten rock art panels have been identified here and in an immediately adjacent shelter. It is noticeable that they are largely concentrated on flowstone surfaces rather than the parent limestone. There are 62 images in all. While the majority of these images recall human faces, with or without stylized concentric ring eyes, there is certainly more to it than that. Owl imagery, reflecting probably both the Jamaican brown owl (*Pseudoscops grammicus*) and the white barn owl (*Tyto alba*), is much in evidence, and their sentinel-like positions at the outer portals of the cave are reminiscent of the Cueva de La Mora. The apparent combination of human and animal motifs in one image, and the conjunction of life and death as shown in skull-like representations, among other things, show clear links to the Taíno cosmology manifested elsewhere at similar sites in the Greater Antilles. Once again, Jamaica certainly does not stand by itself, but forms part of a larger whole.

9 / Excavated Sites and Fauna

Excavations

It probably is not widely realized just how many sites in Jamaica have been excavated in one form or another. As to whether these excavations have been fully reported or indeed published at all is another matter. In Appendix A, the “List of Principal Excavated Sites in Jamaica” included here (and also in the CD-ROM) details are given of 32 sites recorded by James Lee, where the excavations have been at least minimally described. These sites are as follows: St. D’Acre (A3), Bengal (A8), Retreat (A13), Little River (A15), Windsor (A19), Upton (A43), Bellevue–White River (A45), Braziletto (C2), Hartfield (J1), Fairfield (J3), Cinnamon Hill (J10), Jack’s Hill (K1), Norbrook (K5), Martello Tower (K6), Tower Hill (K7), Chancery Hall (K11), Bellevue–Mannings Hill (K13), Rowe’s Corner (M3), Bottom Bay (M4), Belvedere #1 (O1), Spanish Wood (O2), Bowden (O9), White Marl (S1), Rodney’s House (S5), Mountain River Cave (SC1), White Marl Cave (SC5), Stewart Castle (T4), Rio Nuevo (Y4), Wentworth (Y8), Coleraine (Y19), Green Castle (Y25), and Newry (Y27). The last four sites were excavated in 1999–2003 as part of the UWI–Murray State University project in the Annotto Bay area. In another 11 cases no report can be compiled because we know so little, but what information we do have is recorded in the CD-ROM under each site, as follows: Armadale (A2), Scarborough (A10), Liberty Hill (A16), Tydenham (A18), Green Hill (A46), Logie Green (C12), Long Acre Point (E6), Tamarind Hill (H11), Wareika (K2), Long

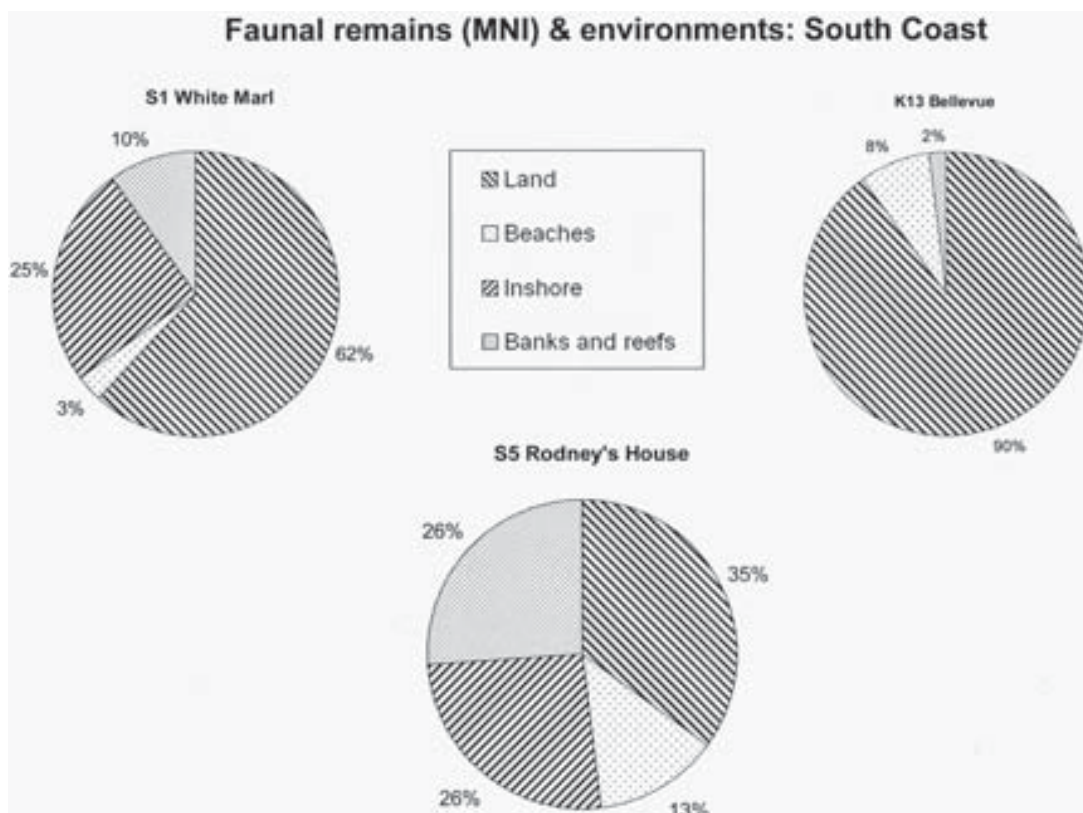
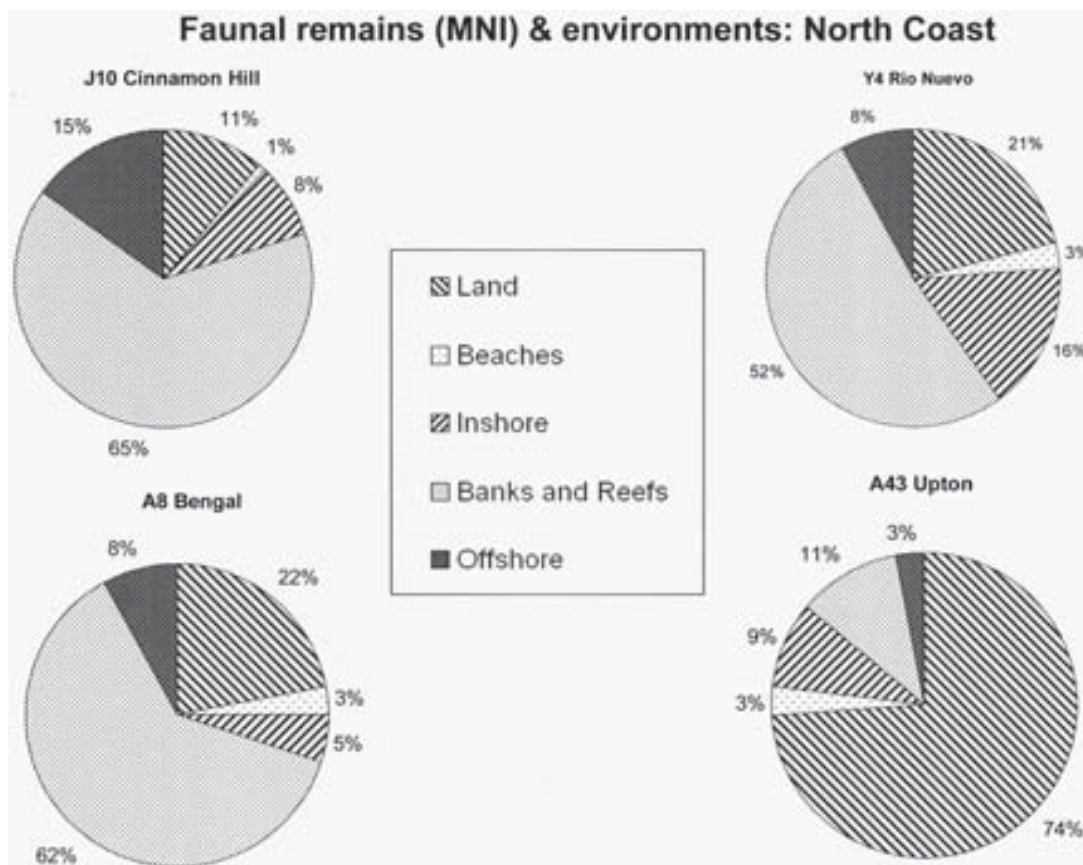
Mountain North (K8), and Iter Boreale (Y14). Then there are records of the excavations at four of the six “new” sites discovered since 1986 (Nanny Town, Sweetwater and Paradise, and New Seville); so, there are 47 excavated sites in all.

A few well-known published reports exist, concerning for example Retreat (A13) (de Booy 1913), Upton (A43) (Wilman 1992–1993), Cinnamon Hill (J10) (AJ 1976, 1:1–7), Tower Hill (K7) (Bullen and Bullen 1974), Bellevue–Mannings Hill (K13) (AJ 1976, 3:3–12; 1976, 4:12–23; 1977, 3:1–11), and Rodney’s House (AJ 1978, 3:1–10; 1980, 4:1–11), and reports on some other sites, for example Bellevue–White River (A45), do exist in unpublished form (Dering 1992). It was a tragedy that R. R. Howard’s sudden death in 1965 prevented him from making a full report on the excavations he carried out at White Marl (S1) between 1958 and 1964. Silverberg, Vanderwal, and Wing (1972) prepared a posthumous report concerning his excavations in 1964, but this could not completely fill the gap, and it also has remained unpublished. Attention has already been drawn to Vanderwal’s continuation of Howard’s work at White Marl, and his excavations at other sites across the island, and to the inadequacies of the record in this respect (Vanderwal 1967, 1968a, 1968d). Although one could no doubt wish for a great deal more, attention should be drawn to the plans that have been published for some of the excavated sites: Cinnamon Hill (Appendix 25), Bellevue–Mannings Hill (Appendix 7), White Marl (Appendix 30), and Rodney’s House (Appendix 24). A feature that is so far unique in Jamaica is the house foundation that John Wilman and C. W. Medhurst excavated at Bellevue–Mannings Hill (Appendix 9). Here, a stratigraphy was published for squares A1–5, in which three successive cultural layers clearly appeared (Appendix 8). The stratigraphy at White Marl was no doubt much more complex, but we only have one schematic profile from that site (Appendix 31).

According to Lee (AJ 1970, 4:3–4), Mountain River Cave (SC1) “produced some potsherds during excavations by Vanderwal near the cave mouth,” and there is a report concerning excavations at White Marl Cave #1 (SC2) (St. Clair 1970), but in general the caves have not been excavated as such. More often, the material was just removed from them, albeit with great care in some cases. This was so at the well-known sites of Halberstadt and Bloxburgh (KC1 and 3) (Duerden 1897), as also at Cambridge Hill (OC1) (Harper 1961–1962; Howard 1950, 1956), and at certain of the caves investigated by Lee, for example Taylor’s Hut (CC15) (AJ 1971, 3:1–2, 6; 1973, 3:3), Spot Valley (JC7) (AJ 1970, 4:2; 1971, 2:2), and Belle Air (AC4) (Lee 1992).

Vertebrate Fauna

Notwithstanding this, and paradoxically enough, we do have quite a lot of information concerning the fauna from some of these sites, including those for which no full excavation report exists. Thus, a comprehensive report on the fauna from White Marl was produced by Elizabeth Wing, who also compared the results with those from Bengal (A8), Rio Nuevo (Y4), and Bellevue–Mannings Hill (K13) (AJ 1977, 1:2–7; Silverberg et al. 1972). In addition, we have reports from Cinnamon Hill (J10) (AJ 1976, 1:9–18), Upton (A43) (Fandrich 1991; Scudder 1994), and Rodney’s House (Scudder 1991, 1992). Wing’s table for the first four sites (AJ 1977, 1:7) (with slight amendments to correct misprints) is at Table 23 in the “List of Principal Excavated Sites in Jamaica,” Appendix A herein (see also Appendix 10). K. F. Johnson’s table for Cinnamon Hill (AJ 1976.1:18) is at Table 24, in Appendix A herein (see also Appendix 27). Information about the fauna from Upton and Rodney’s House is included in the excavation reports on those sites, since Fandrich and Scudder did not originally tabulate their results in the same way as Wing and Johnson. Nonetheless, their reports can provide the basis for so doing (see Table 25 in the “List of Principal Excavated Sites,” Appendix A). The result is that we are able to compare all seven sites (layers 2 and 3 from Bellevue being amalgamated into one) in terms of minimum number of individuals (MNI) represented and in terms of the broad ecological groups recognized by Wing. Scudder presented detailed figures for crabs and lobsters at Rodney’s House. Unfortunately, no quantified information of this kind is available for the other sites, although crabs were certainly present (Silverberg et al. 1972:Table 2, note*), so they have had to be excluded from the comparison. The broad habitat groups recognized by Wing are (1) land (with which freshwater has been amalgamated, since it is hardly represented at all), (2) beaches, (3) inshore or estuarine, (4) banks and reefs, (5) offshore or pelagic. Using the MNI percentages for each of these groups at the seven sites, a convincing general picture of the vertebrate exploitation patterns for both the north coast and the south coast can be obtained. This is shown in the form of pie diagrams at Figures 28 and 29. A clear distinction emerges among those sites that were predominantly exploiting marine resources (Cinnamon Hill, Bengal, Rio Nuevo, Rodney’s House) and those where land resources were more important (Bellevue, Upton, White Marl). This reflects the distance of each site from the sea, but there are also differences between the north and south coasts that relate to the shoreline configurations, as demonstrated by Scudder’s map (1991:Figure 2) (Appendix 43).



Figures 28 and 29. Faunal remains (MNI) and environments: North and South Coasts.

At White Marl, as Wing demonstrated, terrestrial remains were clearly dominant, with 62 percent of the total MNI. *Hutia* alone accounted for 50 percent. The next most important category is inshore species with 25 percent. Principally these are fish, although manatee and alligators are also included. Bank and reef fish account for a further 10 percent. Wing comments that the inshore species mullet and tarpon must have been caught using seine nets, which implies the use of net sinkers. There is a contrast between this site and Bellevue on the one hand and the two north coast sites, Bengal and Rio Nuevo, on the other. At Bellevue, taking layers 2 and 3 together, terrestrial remains account for no less than 90 percent of the total MNI, practically all of these being *hutia*. The remaining 10 percent is made up almost entirely of inshore species. The picture on the north coast is different. The sample from Bengal is rather small, but bank and reef fish dominate with 62 percent of the total MNI. Five percent are inshore species, but, significantly, 8 percent are offshore or pelagic fish, principally tuna. Terrestrial remains are down to 22 percent. A similar picture emerges at Rio Nuevo. Here bank and reef fish account for 52 percent of the total MNI; 16 percent are inshore species, and once again 8 percent are offshore or pelagic fish. Terrestrial remains amount to 21 percent. As at White Marl, seine nets must have been used to catch some of the inshore species, and this is borne out by the large numbers of net sinkers found at the site. Fishing on the reefs, however, required the use of hooks and lines, and traps, as well as seine nets.

Analyzing the figures given by Johnson for Cinnamon Hill in the same way, this site turns out to be very similar to Bengal and Rio Nuevo. Bank and reef fish account for 65 percent of the total MNI, 8 percent are inshore species, and as many as 15 percent are offshore or pelagic fish, mainly tuna. Terrestrial remains amount to 11 percent. The picture is quite different at Upton. Analyzing the results presented by Fandrich and Scudder, it appears that terrestrial remains (mainly *hutia*) are once again predominant, with 74 percent of the total MNI. Inshore and bank and reef fish are about equally represented, with 9 and 11 percent respectively. As Scudder and Fandrich say, the inhabitants of this site pursued a largely land-based subsistence strategy, and insofar as they exploited marine resources they favored fish that lived in coastal waters and coral reefs. The parallel with Bellevue and to a lesser extent with White Marl is quite clear. Finally, the picture at Rodney's House returns us to a largely marine environment, but a somewhat different one, with a land-based component that was not insignificant. Scudder concludes that the overall faunal assemblage from this site "depicts a localised exploitation of typical West Indian

dry-coastal and shallow-water animal communities.” It indicates a “restricted catchment area,” with an absence of distant montane and pelagic species. In comparison with White Marl and Bellevue, one can detect “a clear continuum of coastal to inland localised adaptation.” It is not altogether easy to convert her figures into percentages comparable to those used for the other sites presented here, but according to her summary (Scudder 1991:Table 3) terrestrial remains accounted for 35 percent of the total MNI, inshore and bank and reef species accounted for 26 percent each, and 13 percent belonged to beach species, including sea turtles.

Some details regarding the results from the Annotto Bay area are given in the “List of Principal Excavated Sites,” Appendix A, under the entries for Wentworth (Y8), Coleraine (Y19), Green Castle (Y25), and Newry (Y27). The information comes from the reports by Allgood (2000) and Carlson (2002, 2003a, 2003b, 2004). As Carlson says, the four sites have similar faunal assemblages, reflecting their essentially coastal position. Over 30,000 bones (two-thirds of them from Green Castle) have been analyzed, representing a minimum number of individuals (MNI) of 824, or 72 vertebrate species. Despite their nearness to the coast, terrestrial resources at these sites were not neglected, accounting for 20, 25, 31, and 35 percent of MNI at Wentworth, Green Castle, Coleraine, and Newry respectively. *Hutia* was the most important such resource, but there were also reptiles (including iguanas and galliwaspes) and a variety of birds. Still, the predominant resource was aquatic, mainly fish, with sharks and sea turtles as well. Among the fish, the majority were reef species. In contradistinction to some of the other sites on the north coast, no pelagic fish were caught, but, as Carlson says, there is evidence for a number of different techniques, including hook and line fishing, and the use of nets or traps. Since bone preservation was excellent, there is no reason to think that these results might not be equaled at other sites in the island.

The general picture derived from the above suggests that the Pre-Columbian inhabitants utilized the resources that were most near at hand, and they showed considerable flexibility and ingenuity in doing so. They were clearly expert fishermen, and on occasion they were not afraid to venture far offshore. As yet, we do not have sufficient information to trace reliable time lines, such as those suggested by Elizabeth Wing for the Lesser Antilles in terms of mean trophic levels, whereby the numbers of inshore and pelagic fish caught tended to increase at the expense of reef fish, and there were other indications of overexploitation of the environment.

The CD-ROM contains a special album of paintings of Caribbean fish by

Audrey Wiles. Twenty species are illustrated, according to families, in the following order: Serranidae (groupers and sea basses), Holocentridae (squirrelfishes), Lutjanidae (snappers), Haemulidae (grunts), Chaetodontidae (butterfly fishes and angelfishes), Labridae (wrasses), Scaridae (parrot fishes), Acanthuridae (surgeonfishes), Balistidae (triggerfishes), and Scombridae (tunas and mackerels).

The fact that *hutia* were so frequent at certain sites, particularly Bellevue, has given rise to a debate initiated by Elizabeth Wing, in a paper titled “The Realm between Wild and Domestic” (1993). She suggested that these animals must have been “managed” to sustain the level of predation they endured. Management “in captivity” is what is meant, although there is no evidence of skeletal change at all. This thesis has been carefully tested by Laurie Wilkins (2001), who has reexamined the *hutia* bones from Bellevue, and compared them with a known-age sample of *hutias* that were kept at the Jersey Wildlife Zoo. She finds that the length of the mandibular tooth row (MTR) gives a good estimate of the age of any particular specimen. On the basis of 47 MTRs from Bellevue, she concludes that all ages were represented in the sample, compared with an expectation that, if the animals were “managed,” there would be a more pronounced bias toward young adults. Thus, the age structure of the Bellevue *hutias* “could and probably does represent a natural population.” It is estimated that their density at that time (at least in limestone country) could have been about 450–900 per square kilometer, and that these numbers would have been sufficient to withstand the predation observed, without postulating a “management” strategy that in any case would have been difficult to put into effect. We have noted in Chapter 4 that the Pre-Columbian inhabitants had an effective horticultural “garden” system, and the animals may well have been attracted to browse in these areas, thus making them even easier to catch. Intriguing though the “management” hypothesis is, therefore, it seems to be unlikely.

Mollusks

It is more difficult to arrive at a reliable quantified estimate of the molluscan element in the diet at these sites and at others, because of sampling problems and a degree of uncertainty about the basis for calculation in some cases. At White Marl (S1), the study presented by Silverberg and colleagues (1972) relates to Vanderwal’s sample from 1965 and not to Howard’s from 1964. Over 100,000 shells were collected, representing more than 80 species, but the details

Table 10. Terrestrial and Marine Shells from Upton and Rodney's House.

Site	terrestrial	%	marine	%	total
Upton	3264	88.6	421	11.4	3,685
RH (Wilman)	371	9.9	3,394	90.1	3,765
RH (Scudder)	347	8.4	3,763	91.6	4,110

given in the report are sparse. Forty-two of the species are said to represent an open shoreline environment, in particular *Melongena melongena* and *Arca* spp. Other environments represented include rocky shorelines, mangroves, and lagoons, with only two riverine species. Land snails, especially Pleurodonta, were also abundant. "In the lowest two levels of excavation, a non-edible terrestrial snail, *Sagda* sp., occurs to the virtual exclusion of edible species of mollusca, suggesting a long-standing pristine environment." In succeeding levels, their numbers drastically decreased, "probably due to cultural destruction of their habitat" (Silverberg et al. 1972). For Bengal (A8) and Rio Nuevo (Y4) we have no information.

Upton (A43) and Rodney's House (S5) provide the starkest contrast in terms of the relative abundance of terrestrial and marine shells. Upton was studied by Wilman (1992–1993) and Rodney's House by Wilman (AJ 1978, 3: 4–5 and Appendix C), Medhurst (AJ 1980, 4:10), and Scudder (1991, 1992). The figures provided by these authors are shown in Table 10.

There is close agreement between Wilman and Scudder with respect to Rodney's House, which is the exact opposite of Upton in terms of these parameters. Most of the terrestrial shells at Upton are Pleurodonta. The remainder includes two freshwater species, *Hemisus lineolatus* and *Pila fasciata*, which could have been collected from a freshwater source within walking distance of the site. The marine shells are dominated by six species of *Neritina*, which make up 303 of the total, other common species being *Tectarius muricatus* and *Cittarium pica*. At Rodney's House, the sample used by Wilman and Scudder comes from squares J1 and K2. Medhurst collected what he called a "representative sample" from square S17, which as he said showed little divergence from the preceding set. He counted 604 marine shells only. According to Wilman, there were 46 marine and six or seven terrestrial species. Scudder added four more marine species, but all accounts agree on what were the dominant components. These were *Arca zebra* and *imbricata*, *Donax denticulatus*, *Chama macrophylla*, and *Ostrea frons*. As Scudder comments, these are all shallow water

Table 11. Terrestrial and Marine Shells from Cinnamon Hill and Bellevue.

Site	terrestrial	%	marine	%	total
Cinnamon Hill	3,248	52.7	2,914	47.3	6,162
Bellevue (1974–75)	717	60.2	474	39.8	1,191
Bellevue (1976–77)	2,341	48.4	2,500	51.6	4,841

bivalves. She was at pains to emphasize (Scudder 1991:299, 302) that the counts were made on the basis of fragments only, not MNI, since (even though they were counted as two to one) it was not possible to tell whether the marine bivalve shells came from one or two individuals. Terrestrial or marine gastropods were unaffected.

The other two sites with analyzed invertebrate fauna do not produce such a clear contrast. The mollusks from Cinnamon Hill (J10) were studied by James Lee (AJ 1976, 1) (Appendix 28). Those from Bellevue–Mannings Hill (K13) were analyzed separately for 1974–1975 and 1976–1977 by C. W. Medhurst (AJ 1977, 1:8–9; 1977, 3:4, 8–9). In 1974–1975, ten “random samples” were taken from layers 2 and 3 in squares A1–5. “Allowance was made for bivalves, the two valves counting as one shell.” In 1976–1977, “representative samples” were set aside from each excavated square. The results in terms of terrestrial and marine species are shown in Table 11.

At Cinnamon Hill, Lee identified 11 marine and six terrestrial species. The marine species are dominated by *Codakia orbicularis* and *Arcopagia fausta*, while the terrestrial species are mainly Pleurodonta. He noted that there was a “swing” from marine species dominance in the lower level to that of terrestrial species in the upper level. Medhurst noted the same tendency when comparing the results for layers 2 and 3 at Bellevue in 1974–1975. There was a dominance of marine species in the second phase of the excavation, and Medhurst took this as an indication that it corresponded to the lower layer in A1–5. The first excavation produced 19 marine species and five terrestrial. The second excavation produced 27 marine species and (the same) five terrestrial. Taking the two sets together, the commonest species represented include *Melongena melongena*, *Neritina piratica*, *Neritina reclinata*, *Neritina virginea*, *Anadara ovalis*, *Arca zebra*, *Chione granulata*, *Codakia orbicularis*, *Ostrea frons*, and *Anadara brasiliensis*. All except the last are found at Chancery Hall (K11) and, as in that case, the indications are that these shells came from what is now Kingston Harbour.

Chancery Hall, however, provides a cautionary tale in more ways than one.

A very small excavation at this site took place in 1998, during which shells were recovered from a one-meter-square quadrant and from a single layer in one section (Appendix 22) (Allsworth-Jones et al. 2001). The results of the complete shell study are at Appendix 23. In this table, marine gastropods and bivalves are counted separately. If the bivalves are divided by 2, and the terrestrial gastropods are included, the comparison between the two major categories is as follows: terrestrial 493 (17.2 percent), marine 2,380 (82.8 percent), total 2,873. This method of calculation seems to be what the authors of the reports previously quoted adopted. The predominance of marine species here is hardly less than at Rodney's House, and considerably more so than at Bellevue, despite the fact that in its general situation and in the species represented it is more analogous to Bellevue than to Rodney's House. It is possible that this may reflect to some extent the difference between "random samples" and complete samples, albeit from restricted areas. More significantly the authors of the report on Chancery Hall have a comment to make on the importance to be attached to terrestrial gastropods in general (Allsworth-Jones et al. 2001:118): "There are many places in Jamaica where extensive accumulations of terrestrial gastropods are concentrated in soil profiles with no evidence of archaeological occupation. Furthermore, a Taino rubbish tip may have been a highly desirable habitat for (them). It is therefore premature without additional investigation to assume that the Taino people ate these terrestrial molluscs. . . . They may be present on Taino sites simply because they lived there." In other words, they may not have been part of the diet at all. This is not to say that they may not (among other things) be valuable paleoclimatic indicators.

The contribution that studies of mollusks can make is most convincingly illustrated by the one recently carried out by Keegan and his colleagues at Paradise Park (Keegan et al. 2003). His suggestion that the two sites here indicate climatic change in the period from A.D. 800 to 1500 has already been mentioned in Chapter 4. Keegan and his colleagues list 64 species of marine mollusks that occur at both sites in terms of presence/absence, and six major families in terms of MNI and number of identified specimens (NISP). At Paradise, the Ostionan (Redware) site (Wes-15a), the six major families were represented by 3,881 NISP and 856 MNI. At Sweetwater, the Meillacan (White Marl/Montego Bay) site (Wes-15b), the corresponding figures are 10,637 NISP and 4,466 MNI. Keegan's suggestion is that it is only after the numbers have reached about 3,000 NISP and 800 MNI that stable ratios are obtained. In other words, small sample sizes will not do. In the earlier site Strombidae constitute the predominant family, replaced in the later site by Lucinidae. Veneri-

dae and Arcidae are common in both. The environmental indications are clear. Keegan also emphasizes the role certain of these shells played in tool production. But the role they played in the diet of the Pre-Columbian inhabitants is less sure. In all descriptions of prehistoric sites in Jamaica, shells have loomed large, because they are so numerous and so visible. Yet, as Keegan says, in most cases they probably made only a “relatively minor contribution” to the diet. In the Bahamas, stable isotope analysis has indicated that they provided less than 10 percent of the diet. Thus, they may have served principally as a garnish or flavoring in stews. Considering the importance that spices of various kinds have had in human history, this is still not an inconsiderable contribution.

The Lee Collection

In the nature of things, the Lee Collection cannot compare with the faunal material derived from excavated sites. It consists of surface finds gathered together over many years. Lisabeth Carlson has studied the collection, and her complete report is on the CD-ROM. The animal bones total 393, representing a minimum number of 150 individuals, from 62 sites. Twenty-eight species and/or genera are represented. Six are domestic animals that must postdate the Spanish conquest and clearly indicate admixture. There are three other mammals (*hutia*, manatee, dog), three birds (heron, dove, Jamaican brown owl), five reptiles (freshwater turtle, green turtle, crocodile, iguana, and snake, identified only as *Alsophis* sp.), nine fish, and two land crabs (both black and white). The full list is given in Table 2 of Carlson’s report. As she says, there are various biases inherent in the collection strategy, which favored large and usually identifiable bones. Because of this, fish are undoubtedly underrepresented, although they and *hutia* are still the most common of the remains. Green turtle and manatee were probably easily recognized, particularly manatee ribs, which were often used by the Taíno to make artifacts.

As Carlson points out, for a sample to provide a reasonably complete picture of the fauna prevalent at any particular site, there must be a minimum of 1,400 bones and an MNI of 200. The largest single sample in the collection comes from Rowe’s Corner (M3) with 63 identified bones, of which more than half are *hutia*. This is nowhere near the amount needed, and from many of the sites we have only single bones. The report, therefore, is primarily a catalogue or index of species. A possible exception to this is the material collected from three undisturbed cave sites that were discovered by Lee and his colleagues, Spot Valley Cave (JC7), Taylor’s Hut (CC15), and Belle Air (AC4). The small collec-

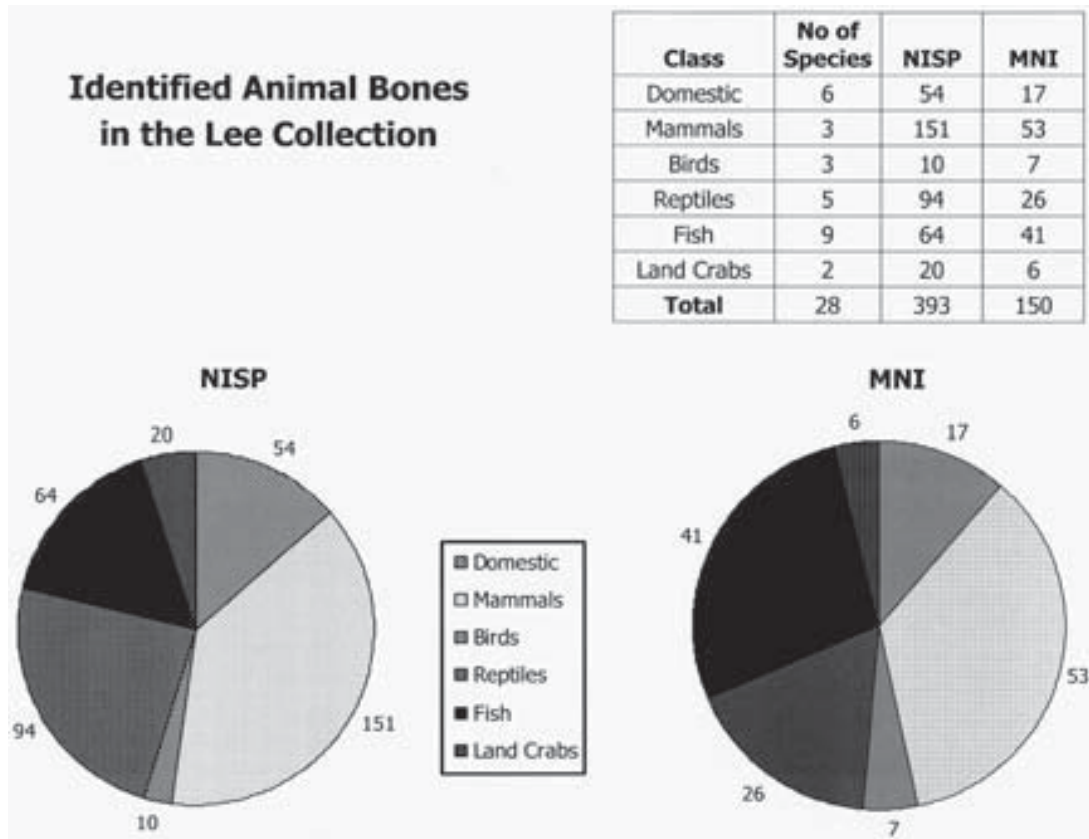


Figure 30. Identified animal bones in the Lee Collection.

tions from the first two sites are not particularly revealing, but attention should be drawn to Belle Air. The material from this site includes six goat bones, one mandible, and five post-cranial bones, including three complete tibiae, indicating the presence of at least two individuals. This might be dismissed as the usual postconquest admixture (and indeed goats could at any time have fallen into the cave) were it not for the statement of James Lee (1992) that in the largest bowl he found in situ, “a small sheep skull had been set, suggesting that the cave was used for burials during the contact period.” The sheep skull itself is not in the collection.

The mollusks in the Lee Collection were identified by Simon Mitchell, whose report is on the CD-ROM. The same limitations as above apply. There are 1,221 identified specimens from 132 sites. Of these, 943 are marine gastropods and bivalves, representing 68 species. Commonest among these are *Strombus gigas* and *Codakia orbicularis*, while Pleurodonta dominate among the terrestrial gastropods. This, however, is no more than a grab sample. Tables setting out the numbers for both animals and mollusks are at Figures 30 and 31.

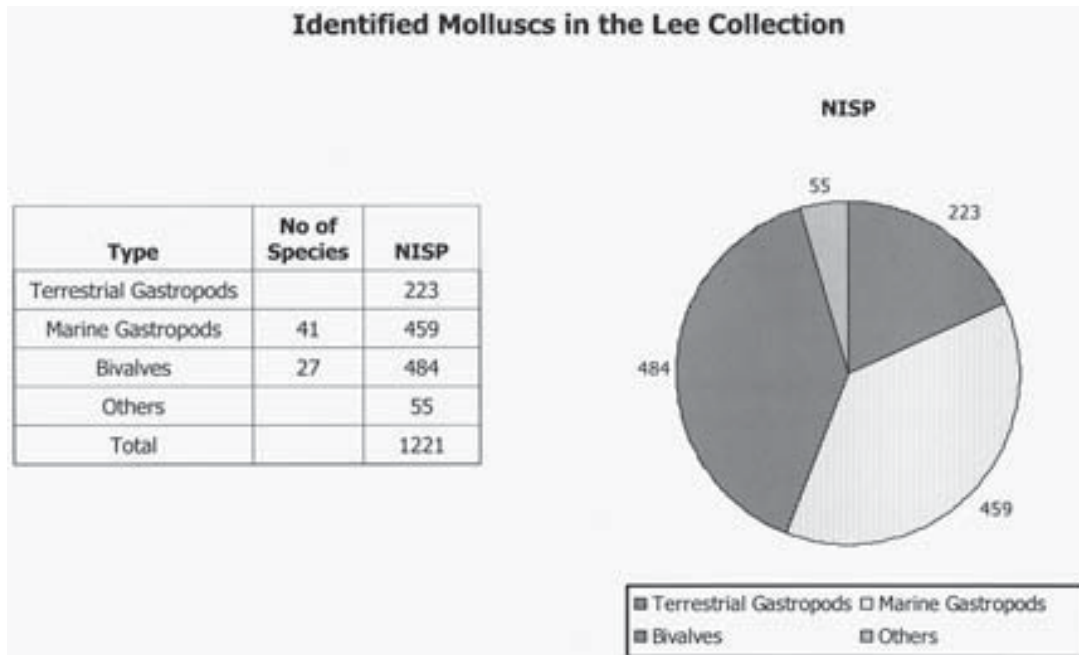


Figure 31. Identified mollusks in the Lee Collection.

Future Prospects

While the conclusions to be drawn from the Lee Collection as such therefore are fairly modest, it is obvious from the account of the excavated sites given above that Jamaica has huge potential in the field of faunal studies. Faunal preservation in general is excellent, and with careful collection techniques and specialist study, there is no reason why our knowledge should not expand dramatically in the years to come.

10 / Burials and Human Remains

Burial Caves

As noted in Chapter 2, it was in the last years of the nineteenth century that the Pre-Columbian past of the island began to be seriously studied, and “burial caves” in particular attracted considerable interest. As Duerden (1897) convincingly explained, such caves had served as “natural ossuaries” and not as places of refuge. He listed six of them immediately east of Kingston, four on the south coast, and four in the west of the island. The group east of Kingston included Halberstadt (KC1), Dallas Castle (KC2), Cambridge Hill (OC1), Bloxburgh, Richmond Hill, and Botany Bay. Halberstadt was the most remarkable because of the large number of human remains found within it, a minimum of 34 individuals according to Duerden (1895), some of which W. H. Flower (1895) and A. C. Haddon (1897) studied. All these writers commented on the practice of cranial deformation. Of the six complete adult skulls described by Flower (three male and three female) five showed evidence of this practice. He emphasized that among the bones in general all ages were represented, from children as young as 4 or 5 years to the very old. The mean cranial capacity of seven skulls examined by Haddon was 1,282 c.c., all being brachycephalic. At the Cambridge Hill site described by Duerden, “seven practically perfect crania were secured and fragments of many others.” At Richmond Hill, he noted that one “flattened skull” was “laid on its side” in a complete pottery vessel (Duerden 1897:Plate VI, Figure 1). At Botany Bay, five “nearly complete skulls” were found, as well as fragments of others. Duerden’s sites on the south coast included Pedro Bluff (EC4) and a cave on Great Goat Island. Pedro

Bluff was recorded as a burial site as far back as 1855, and three or four skulls were obtained, as well as one that was reported on by Flower in 1890 (Duerden 1897:22). From a “deep cave” on Great Goat Island, a “perfect oval-shaped vessel with expanded ornamental handles” was found, with “the flattened skull of a young individual” inside it (Duerden 1897:Plate V, Figure 5). Duerden’s account therefore clearly documented the practice of secondary burial (particularly of skulls) at these sites. A number of them also contained funerary goods of various kinds.

Following this initial burst of interest there was a long hiatus, until after the Second World War. In 1946, according to Howard (1950), C. B. Lewis investigated another cave at Cambridge Hill, which was apparently adjacent to but not identical with the one mentioned by Duerden. The remains of at least 40 individuals were recovered, as well as several complete pottery vessels, and a miniature *duho* made of *lignum vitae* (Appendix 20). W. F. Harper (1961–1962) was subsequently able to study 24 of the crania from the site. “All showed some evidence of having been subjected to intentional deformation,” although as he added, there is “no clear proof that the practice affected the brain in any way.” Harper illustrated two adult individuals in which frontal flattening was marked (Appendixes 32 and 33) and also a young individual aged 10 to 12 years whose cranium, although only moderately deformed, “exhibited a number of features resulting from the deformatory process” (Appendixes 34 and 35). The mean cranial capacity of 14 skulls that could be measured was 1,290 c.c., all being brachycephalic.

James Lee’s discoveries at four cave sites were no less remarkable than those made at the end of the nineteenth century. In 1968 two skulls, as well as other bones, teeth, and pottery were recovered from Bull Savannah #2 (EC12). In 1971 a considerable amount of archaeological material was removed from Spot Valley Cave (JC7), which, as mentioned in Chapter 7, also contains pictographs. The human remains now in the Lee Collection come from a minimum number of eight different individuals. In the same year the undisturbed site of Taylor’s Hut (CC15) was discovered. One intact bowl containing a skull was found in situ (AJ 1971, 4:6) and there were two other skulls, as well as 11 complete vessels that are now in the Lee Collection. In 1986 the site of Belle Air (AC4) produced four complete vessels and the remains of at least six human skeletons that had been buried in the cave.

The total number of burial caves mapped by Lee and listed here comes to 39 sites. He was not able to relocate some of the sites mentioned by his predecessors, including certain very well-known ones, and these have been excluded, unless their coordinates have been given by Fincham (1997), as is the

case for example with Halberstadt, Dallas Castle, and Cambridge Hill. A few sites listed by Lee as burial caves have also been excluded, on the grounds that there is now no compelling evidence that this was their function. The mapped sites listed here therefore constitute a minimum number. By parish, they are as follows: Adstock (AC2), Silent Home (AC3), Belle Air (AC4), Portland Cave (CC4), High Dome Cave (CC8), God's Well #1 (CC9), Jackson Bay South (CC14), Taylor's Hut #1 (CC15), Hounslow–Boy Hole (EC2), Hounslow–Money (EC3), Pedro Bluff (EC4), Parchment (EC5), Peru (EC6), Bull Savannah #1 (EC7), Ballard's Valley #1 (EC8), Ballard's Valley #2 (EC9), Baalbec (EC10), Bull Savannah #2 (EC12), Breadnut Wood #1 (EC13), Breadnut Wood #2 (EC14), Dildo Point (EC17), Simeon Genus (EC18), Abingdon (HC1), Spot Valley Cave (JC7), Halberstadt (KC1), Dallas Castle (KC2), Beverly Hills (KC7), Little Bay (MC4), Cuckold Point Cave (MC5), Cambridge Hill (OC1), White Marl #1 (SC5), Holland Hill (TC3), Windsor (TC4), Hyde (TC6), Drummond (WC1), New Mountain Cave (WC3), Westcliffe (WC4), Wire Lane (WC5), and Orange Hill (WC6).

Midden Sites

The early investigators concentrated their energies entirely on cave sites when looking for Arawak burials (Table 12). This notwithstanding the fact that in 1774 Edward Long had already described such a burial in an open-air site, later recorded by Lee as Ocho Rios (A25), by the side of the old road to St. Ann's Bay in what is now Carinosa Gardens. It was not until the excavations conducted by Howard and his successors at White Marl in the years from 1958 to 1969 that the full extent of inhumations in open-air sites became apparent. In all there were 15 burials, with 16 individuals represented, of whom three were children. In most cases, the skeletons were accompanied by grave goods, usually pottery vessels. The commonest recorded position was flexed, lying on the left side. Full details are given in the excavation report for White Marl (S1). Notwithstanding this, Lee did not record "burial" midden sites separately, as he did in the case of caves. An examination of the literature (particularly "Archaeology Jamaica") reveals that up to now there are 15 such sites on the island, with a minimum number of 42 buried individuals, as tabulated below.

As can be seen, in the majority of cases, no more than one burial was recorded. George Lechler recovered the seven skeletons at Chancery Hall as part of rescue operations at the site after 1990 (Lechler 2000). The two skeletons at Green Castle were revealed during the joint excavation project conducted by the University of the West Indies and Murray State University in 1999–2001

Table 12. Burials Recorded in Jamaican Middens.

Sites	MNI
A20 Cranbrook	3
A25 Ocho Rios	1
A43 Upton	1
E2 Fort Charles	1
H11 Tamarind Hill	1
J10 Cinnamon Hill	1
K8 Long Mt. North	1
K11 Chancery Hall	7
K13 Bellevue–Mannings Hill	3
M3 Rowe's Corner	1
S1 White Marl	16
S12 Naggo Head	1
Y4 Rio Nuevo	2
Y8 Wentworth	1
Y25 Green Castle	2

(Allsworth-Jones and Wesler 2003:Figure 3). The two burials have been described by Ana Luisa Santos. Adult burial 1, probably a male, was interred in a flexed position, with an associated ceramic vessel at his feet. He was lying on his left side, with the right hand gripping the left forearm. Burial 2 is that of a child, with an estimated age at death of about seven. The inhumation was in a flexed position, with all the bones from the lower limbs so much contracted as to suggest that he or she may have been bound before burial. The child was lying on its right side, with the left hand gripping the right elbow. In their general posture, therefore, there is a similarity between the two burials, suggesting that a definite ritual was being observed.

The existence of deliberate burials in caves and in open-air sites means that the Pre-Columbian inhabitants considered both to be appropriate resting places. It is not clear what determined the choice between the two, or what criteria dictated that secondary burials (particularly of the head) were carried out in some cases.

The Lee Collection

The number of identified bones in the Lee Collection is 399, representing a minimum number of individuals (MNI) of 46, from 25 locations (16 mid-

dens, eight caves, and one of uncertain provenance). Full details are provided in the report by Santos included as part of the CD-ROM. She has identified 18 of the individuals as adults, 14 as immature, and 14 as uncertain. The specimens recovered from the caves (such as the ones already mentioned) may well or certainly did form part of deliberate burials, but this is not certain in the case of the middens. Some of the sites already mentioned (such as White Marl and Chancery Hall) are represented, but in the majority of cases we have no record that these open-air locations contained burials as such. The results for the sites, Table 13, are provided in terms of numbers of identified specimens (NISP) and MNI.

The collection includes two skulls, from Taylor's Hut (CC15) and Bull Savannah #2 (EC12). They are shown at Appendixes 1 and 3 on skull recording forms that indicate those parts that are present and their state of preservation. Metrical details are given in Appendix 2. This table also gives details of three more skulls: two from a location that has not been precisely identified in Hellshire, and a second specimen from Bull Savannah #2. These skulls are housed respectively in the Archaeology Laboratory and the Department of Anatomy at UWI, but they do not form part of the Lee Collection. It is interesting to compare the results, but as Santos says, the size of the available sample does not permit either a statistical analysis or a population characterization.

She has commented in particular on the pathological evidence these remains reveal (Santos et al. 2002). At Black River West (E12) an increase in thickness in two fragments of tibiae and in one fibula is regarded as a possible indication of a treponemal disease. Signs of degenerative joint diseases, such as eburnation in an atlas and a humerus, and osteoarthritis in several bones, were detected at Hartfield (J10) and Spot Valley Cave (JC7). A case of congenital pathology has been observed in a juvenile mandible from Rio Nuevo (Y4), which has only three sockets for what should have been four incisors.

Recent Developments

Further investigations have recently been carried out in regard to the second skull from Bull Savannah #2, which has been in the care of Michael Gardner in the Department of Anatomy at UWI. These relate first to the physical condition of the skull and second to its dating. Ana Luisa Santos has described its physical condition. She remarks on the fact that there are numerous lytic lesions in the frontal and in both parietal bones. The margins of these lesions are rounded at the outer table, with evidence of healing, and slight pitting is evi-

Table 13. Identified Human Bones in the Lee Collection.

Middens	NISP	MNI	Caves	NISP	MNI
A19 Windsor	1	1	AC4 Belle Air	51	6
A20 Cranbrook	1	1	CC15 Taylor's Hut #1	1	1
A24 Moneague	4	1	EC12 Bull Savannah #2	1	1
C1 Round Hill	3	1	EC13 Breadnut Wood #1	6	2
E12 Black River West	18	3	JC7 Spot Valley Cave	185	8
H9 Spaniard Hill	2	1	WC3 New Mountain Cave	18	2
H13 Paradise	1	1	WC4 Westcliffe	1	1
J1 Hartfield	63	4	WC5 Wire Lane	3	1
K11 Chancery Hall	8	2			
K13 Bellevue-Mannings Hill	1	1	Total	266	22
S1 White Marl	8	2			
S12 Naggo Head	1	1			
T2 Braco	1	1	uncertain	NISP	MNI
T7 Pantrepant	9	1			
Y4 Rio Nuevo	1	1	U3B50	10	1
Y19 Coleraine	1	1			
Total	123	23	Total	399	46

dent in the affected areas. Radiological and CT examination shows that they spread throughout the diploe, producing an irregular surface. These pathological features indicate that the individual suffered from a treponemal disease, presumably syphilis. Intensive efforts were therefore made to date this specimen. Three radiocarbon dates have been obtained on two small pieces cut from the right occipital bone at the Oxford University radiocarbon laboratory as follows: 1101 ± 27 B.P. (OxA-12995), 1123 ± 25 B.P. (OxA-13614), and 1069 ± 23 B.P. (OxA-13664). As the laboratory comments, the combined dates when calibrated at one standard deviation give an estimated age range from A.D. 900 to 985. In addition, there are four further radiocarbon dates on an adjacent piece cut from the right occipital bone that were reported by the Beta Analytic laboratory. Two of these dates are similar to the ones quoted above, but in addition there are two older ones as follows: 1870 ± 40 B.P. and 2760 ± 40 B.P.. Darden Hood comments that these inconsistent results show that this particular portion of bone must have been contaminated. There is no sign of contamination in the samples dated at Oxford.

Quite apart from any question of contamination, a date for the skull older than A.D. 900–985 is considered unlikely on general grounds, both because it would be inconsistent with what is otherwise known of the Jamaican archaeological sequence, and because elsewhere in the Greater Antilles the practice of artificial skull modification (manifest on this specimen) is unknown before the first millennium A.D. In Puerto Rico, for example, this is evident on the basis of the information from Maruca and from Tibes (Curet 2002; Rodríguez 1999). A date in the range A.D. 900–985 is in any case important for the debate concerning the origin of treponemal diseases in the Caribbean. It is not possible to be entirely sure of the Jamaican archaeological context of this specimen. As noted in the CD-ROM, Lee stated that there were some pottery fragments in the cave that were “distinctly Redware style but without the red colouring.” But the Lee Collection includes at least one rim of White Marl type. The calibrated date range of the three samples from Oxford falls within the earlier part of the sequence at White Marl itself, and it might therefore be prudent to accept that as the most likely archaeological correlate of this specimen. Its significance in a Jamaican and a Caribbean context is undeniable.

Another example of new work being carried out on the island comes from Somerville cave, where Elizabeth Rega and her colleagues carried out excavations in 1996–1999 (Rega 2006). This cave is part of the Jackson’s Bay complex on Portland Ridge in southern Clarendon (Fincham 1997:210–212, 336–337). The excavations took place in the Entrance Pit on the east, where the

deposits are 10 m below an opening on the present ground surface. There is a degree of bioturbation, largely due to the activities of land crabs, leading to some sorting of bone fragments by size, but nonetheless two apparently satisfactory radiocarbon dates were obtained, as follows: 940 ± 40 B.P. (Beta-170212) and 620 ± 40 B.P. (Beta-170213). The calibrated age ranges for these dates work out at A.D. 1010–1195 and 1290–1410 respectively. Entirely consonant with this is the discovery of several White Marl style pottery fragments in the deposits. Altogether a minimum number of 12 human individuals have been identified: one neonate, one infant, four juvenile, five adult, and one possible senescent. This mixture of ages is similar to that detected at other Jamaican caves in the past. Spiral fractures on the femora of one of the juveniles suggest that in this case he met his death through high velocity antemortem impact.

This study clearly indicates the tremendous potential for further work concerning Pre-Columbian human remains in Jamaica. Extant collections of human skeletal material formerly housed at the White Marl museum (including Cambridge Hill) remain to be examined in detail, and would surely reveal a wealth of information. Excavated new material (as at Green Castle) should be carefully recorded both in the field and the laboratory. Only when we have enough thoroughly analyzed material on hand will we be able to undertake quantitative studies of dental and skeletal morphology, as well as DNA attributes, such as have been carried out in Cuba and the Dominican Republic (Coppa et al. 1995; Danubio 1987; Lalueza-Fox et al. 2003).

11 / Conclusion

Arising from what has been said in the preceding chapters, there are perhaps some points that deserve reemphasizing. Clearly, the Lee Collection represents an invaluable source for reconstructing the Pre-Columbian settlement of the island. But what we have here is a framework to which new things are being and can be added. Certainly new sites will be discovered, and with careful excavation the chronology, the local variations, and the lifestyle of the inhabitants will become better known. Patterns will begin to emerge. Already at Rio Nuevo it has been shown that there are layers of marl within the site, so White Marl is no longer unique in that respect, and from studies in the immediate vicinity it is clear that the larger sites that we know had many smaller previously unknown ones clustered around them. Hence the distribution pattern given here will be modified considerably in years to come. At Paradise Park, environmentally centered excavations and analyses have pointed the way to interpretations that are not wholly or even mainly culture-historically oriented. In the Annotto Bay area, detailed excavations have produced dating evidence and stratigraphic profiles (as well as information regarding subsistence and human burials) that may act as a model for further investigations of this sort. Above all, publication of data such as this is needed, so that Jamaica can take its rightful place as a full part of the Caribbean prehistoric story, and the vigorous scholarly discourse that characterizes the study of the prehistoric past in other parts of the Caribbean can extend to these shores also. There is no lack of material that could prevent this happening, but with development threatening to destroy many sites, time may also not be on our side. This is abundantly evident in the northwest of

the island in relation to the Montego Bay sites, now being reexamined by Ivor Conolley. With the accumulation of more, and better, published data, it may be possible to address more general or theoretical questions, such as the number of “Indian tribes” on the island, and what this designation might mean, socially and even linguistically. General frameworks for the study of prehistory in the Caribbean are changing, and Jamaican prehistorians should be part of this movement of change, rather than being merely swept along by it.

A great deal of quantitative information has been presented here on the 265 sites so carefully mapped by James Lee. That was a lifetime’s work, and full advantage should be taken of it. The data have been summarized and limited statistics have been derived from them, but there is more that could be done. Even if it is clear that the sites may represent no more than the “pick of the bunch,” a GIS analysis could be undertaken, which would have even a predictive value. The patterns inherent in the data have not yet been fully explored. Without even the need for new excavations, there is much that can and should be done to study and publish material already excavated. In this respect, attention has been drawn to the artifacts previously kept at the White Marl museum, and now stored at the JNHT, both from Howard’s excavations at White Marl and from Vanderwal’s excavations at various sites in the island. A beginning has been made on the analysis of the material ascribed to the Montego Bay variant, at Hartfield and Fairfield, but a great deal more could be done, with existing resources. The presently stored material includes not only artifacts but also human and animal remains. It is regrettable that since the 1890s, with the exception of one article by Harper concerning Cambridge Hill cave, there has been practically no professional study done of the human skeletal material excavated from Jamaican sites. Even Cambridge Hill was not studied exhaustively. With the right professional help, and appropriate financial resources, it would not be too difficult to fill this gap, and Jamaica would benefit by it. Elizabeth Rega’s studies at Somerville cave point the way. With regard to the animal remains, the country needs at least one locally trained specialist who could handle this aspect. At the moment, faunal remains have to be studied elsewhere, and while our colleagues do an excellent job, and have first-class comparative material, there should be some long-term qualified local input. As demonstrated recently in the Annotto Bay area, faunal preservation at Jamaican prehistoric sites is astonishingly good, and full advantage should be taken of that fact.

Apart from the study and publication of material, Jamaica’s cultural institutions also have a duty of care and preservation of existing monuments and sites on the island. Lee was particularly proud of his role in relocating, and then in

purchasing and fencing, the Pre-Columbian rock art site of Mountain River Cave. But as he pointed out, many other such sites on the island have been damaged by vandalism. They include Warminster, described by him as the largest and best remaining group of petroglyphs on the island. That site has recently been restored, and careful examination has revealed the presence of no less than 62 figures, some of them quite unusual in the Jamaican and Caribbean context. Elsewhere, the motifs depicted have a general Caribbean resonance, for example the “shrouded human bodies” detected by Duerden at Mountain River Cave in comparison with Roe’s “wrapped ancestors” in Puerto Rico. At all events, these images are both an eloquent testimony to the beliefs and skills of Jamaica’s Pre-Columbian people, and a reminder that Jamaican prehistory belongs in a wider Caribbean world. They need to be protected.

Let us hope then that the achievements of Lee and others in the field of Jamaican prehistory will be equaled by their successors. In many respects, the foundations have been well laid, but so much more remains to be done.

Appendix A

List of Principal Excavated Sites in Jamaica

St. Ann

St. D'Acre (A3)

Bengal (A8)

Retreat (A13)

Little River (A15)

Windsor (A19)

Upton (A43)

Bellevue–White River (A45)

Clarendon

Braziletto (C2)

St. James

Hartfield (J1)

Fairfield (J3)

Cinnamon Hill (J10)

Kingston and St. Andrew

Jack's Hill (K1)

Norbrook (K5)

Martello Tower (Fort Nugent) (K6)

Tower Hill (K7)

Chancery Hall (K11)

Bellevue–Mannings Hill (K13)

Manchester

Rowe's Corner (M3)

Bottom Bay (M4)

St. Thomas

Belvedere #1 (O1)

Spanish Wood (Duckenfield) (O2)

Bowden (O9)

St. Catherine

White Marl (S1)

Rodney's House (S5)

Mountain River Cave (SC1)

White Marl Cave #1 (SC5)

Trelawny

Stewart Castle (T4)

St. Mary

Rio Nuevo (Y4)

Wentworth (Y8)

Coleraine (Y19)

Green Castle (Y25)

Newry (Y27)

St. Ann

St. D'Acre (A3)

Listed by Cundall (1939) and mentioned by Howard (1950). St. D'Acre was the first site investigated by G. C. Longley (1914), probably in 1912. He found a number of middens on a hilltop at this location. As described by Howard, "he ran several test trenches, sometimes as deep as five feet, and found deposits of shell, ashes, charcoal, pieces of pottery, and stone implements at various well defined levels, which appeared to him to indicate that the site had been abandoned and reoccupied at different periods." The site was still extant in 1973, when it was reported to be planted in vegetables.

References: AJ 1967, 2:22; 1968, 5:1; 1973, 3:1; Cundall 1939; Howard 1950:67; Lee, in AJ (n.s.) 1992, 5:15,17; Longley 1914.

Bengal (A8)

First discovered by Captain Cotter in 1961. Excavated by Father Osborne in 1962–1964. Surveyed by Lee in conjunction with Osborne in 1962. It was concluded from evidence of surface sherds that the settlement covered some 2 acres. As described by Osborne, “the middens range from 400’ to 460’ above sea level, and overlook the bay at Rio Bueno. The site had the advantage for the Arawaks of being close to fresh water from Rio Bueno and the sea at the Bay. The soil is fertile.” According to Vanderwal, the site was “totally undisturbed” in 1968, apart from the area excavated by Osborne.

During Osborne’s excavations, a 6 in square concrete marker with a floor tile on the top was placed in what was considered to be the center of the site, and this acted as a datum point. From it was pegged out a grid of 10-ft squares, 140 x 40 ft in extent. Later, the grid was extended south “to include a rich midden which had already been opened by Mr Cotter.” Sixteen grid squares numbered I–XVI were chosen for excavation, though seemingly not all of them were dug. Square VII was dug in 10-in levels and produced “a large griddle some 3 feet in diameter,” with associated “evidence of fire in the form of charcoal, and also much faunal material.” Following J. M. Cruxent’s recommendation, square VI was excavated in 25-cm levels, all the finds from the levels being bagged separately. In addition, it seems, “a trench was dug to allow a stratigraphic picture of a whole midden,” reaching a maximum depth of 4 ft 6 in. This presumably is the “main excavation” referred to by Vanderwal, who stated that it measured 30 ft long by 3 ft wide “across one of the larger middens.” The analysis of the pottery from Bengal “provided a control” for the seriation of sites he did for the north coast (Vanderwal 1968a:Figure 7). Neither a plan of the site nor a detailed account of the finds was published by Osborne. Charcoal was collected for radiocarbon dating, and according to Vanderwal such a date was obtained of A.D. 1180 \pm 100 (770 \pm 100 B.P.) (IVIC-190), equivalent to a calibrated range of ca. A.D. 1160–1300. He regarded this as applying to the “Fairfield Complex.”

E. S. Wing studied the fauna from Father Osborne’s excavations (Appendix 10; reproduced here at Table 23). As she says, the sample from Bengal consists of 132 individuals and 17 species. “All the species preserved in the site are clearly not represented in such a small sample.” Taking the figures as they are, the minimum number of individuals (MNI) can be divided into different habi-

tats, as follows: terrestrial 29 (22 percent), freshwater 1 (1 percent), beaches 4 (3 percent), inshore estuarine 6 (5 percent), banks and reefs 82 (62 percent), offshore pelagic 10 (8 percent). The terrestrial remains consist exclusively of *hutia*. The single freshwater specimen represented is a turtle, *Chrysemys* cf. *terrapen*, one piece of shell of which was found. Sea turtles (Cheloniidae) were evidently located on the beaches. Inshore fish are not common and are dominated by jack (*Caranx*). Offshore pelagic species are likewise not numerous, but their presence is very significant. The majority consist of tuna (*Thunnus*) but there is also one dolphin (*Coryphaena* sp.). If the species represented is *Coryphaena hippurus*, this would indicate daytime fishing. By far the majority of the fish represented are bank and reef species. They are dominated by grouper (Serranidae). Other frequent species include snapper (*Lutjanus*), grunt (*Haemulon*), parrot fish (*Scaridae*), and triggerfish (*Balistidae*). One reef dwelling genus represented at Bengal, but not at the other sites considered by Wing, is the angelfish (*Pomacanthus* sp.). The sample from Bengal did not include any crabs. In general, the division of species by habitat is very similar to that at Rio Nuevo (Y4).

References: AJ 1965, 2:1–2; 1965, 5:2; 1966, 8:1; 1973, 3:1; 1977, 1:2, 7; 1978, 1:2; 1978, 4:2; Lee 1992; Silverberg et al. 1972; Vanderwal 1968a:59–62, 123, 127 (Figure 7), 136.

Retreat (A13)

One of the first open-air sites in Jamaica to be excavated and described in some detail. According to Duerden (1897), investigations were first conducted by Miss Moulton Barrett, who found some pottery and other remains “on a ridge of land connecting two hills.” The ridge was “covered with small mounds,” all of which produced material. Duerden commented that the “hill or ridge” was at an elevation of about 1,200 ft above sea level, one of a series of weathered white limestone “rounded elevations.” According to Duerden, it was known as “Cacique’s Ridge” or “Little Nigger-ground Hill,” the latter a reference to the fact that it had been used as a provision ground. Duerden himself conducted excavations at “numerous spots” in the locality. The next excavations were carried out by T. de Booy in 1913, and he suggested that the middens on the “original summit” of the hill, which by then was “practically level,” had probably been removed by the first two investigations (de Booy 1913:Figure 111). His own excavations were concentrated on the northern, eastern, and southern slopes. Another of the hitherto untouched middens was excavated by M. de Wolf in 1933 (de Wolf 1953). Lee relocated the site, and he refers to excavations by Father Osborne, but no written record of these is available.

Duerden excavated in the “upper dark loose earth” to a depth of up to 2 ft. At one point “a deposit of partially indurated bluish-grey ash and charcoal gave evidence of the use of fire by the builders of the refuse-heaps.” There were many land snails (*Helix acuta* and *Helix jamaicensis*) and a few marine shells (*Turbo pica*, *Strombus gigas*, *Codakia tigerina*, *Tellina fausta*). He thought that the material from the site in general was similar to that from Stewart Castle (T4) and Wales (T6).

De Booy reported and roughly mapped 16 middens, four of which he excavated. His most extensive excavations were in midden 4. He dug three trenches here, A (14 x 10 ft), B (38 x 10 ft), and C (10 x 10 ft). The principal trench B reached a maximum depth of 4 ft. An “ash deposit” 8 to 12 inches thick was found on the southern but not on the northern slope of the mound. Interestingly enough, de Booy stated that in excavating midden 4 his aim was not to obtain more archaeological material, but to procure “as accurate information as possible regarding the location of the huts and the exact limits of the shell and ash deposits” (de Booy 1913:429). By putting down test pits he ascertained that the ash deposit “extended round the southern slope, covering in all about half the circumference of the midden,” whereas deposits of shells covered “about 270 degrees of the circumference.” From the “direction of the shell and ash deposits” he concluded that the “aboriginal abode” (i.e., the “probable location of huts”) was on the top of the hummock and that “the inhabitants threw the refuse and discarded artifacts in three quadrants of the circle: in other words, in all directions save one, which afforded them at least one clean, clear space” in front of the dwellings.

De Booy concluded that in all the middens at this locality at least 98 percent of the shells found were those of land snails, the remainder being sea-shells. He identified three species of Pleurodont, *Sagda alligans*, two species of *Arca*, *Livona pica*, *Fasciolaria distans*, *Avicula*, and *Strombus gigas*. He also found bones of *hutia* and fish, which were not more closely identified. He drew particular attention to the presence of the remains of boat-shaped type pots with “banded edges,” “decorated handles,” and elaborate “incised decorations,” as well as griddles with a diameter of about 14 in. There were also petaloid celts, hammer and other stones, and a single conch shell celt. Although differing in detail, Vanderwal agreed with de Booy that “the Retreat site, in common with many others on the north coast, does have pottery decoration unique to Jamaica.”

In 1933 M. de Wolf excavated another of the mounds that had not been investigated by de Booy (de Wolf 1953). “On the eastern brow of the hill, it lies

between No. 6 and No. 7 on de Booy's chart" (de Booy 1913:Figure 111). A trench 15 ft long and 2 ft wide was cut through from east to west, widened further at one point where the "richest finds" were made. The maximum depth of deposit was about 2 ft 10 in. Seventy-seven sherds were retained from the excavation, representing "between 5 and 10 percent" of the total. They were said to match those found by de Booy and were described as "Jamaican Meillac." The shells and animal bones found (and cursorily described) seem to have been as before, with one exception. This was an artifact apparently made from a crocodile tooth (? *Crocodilus acutus*). The tooth had been drilled and "was probably used as an ornament."

A new map of the site, using digital technology, was produced in 2004 by a team under the direction of P. Allsworth-Jones and M. Kappers. The results were reported to the 21st Congress of the International Association for Caribbean Archaeology, meeting in Trinidad in 2005.

References: AJ 1965, 5:2; 1966, 8:1; 1968, 5:1; 1974, 3:1; 1980, 2:3; de Booy 1913; de Wolf 1953:234–236; Cundall 1939:19; Duerden 1897:19–20; Howard 1950:64–66; Lee, in AJ (n.s.) 1992, 5:16; Vanderwal 1968a:18–20.

Little River (A15)

This site was investigated by M. de Wolf in 1933 but only published much later (1953). According to her description, some middens were situated on the east bank of the Little River, where it enters the sea. This does not agree with Lee's map, where the site appears to the west of the river of that name. De Wolf stated that "the largest midden, about 2 metres high, was half washed away by the sea at that time and may well be completely washed away by now." The precarious position of the site was confirmed by Lee, who stated in 1976 that when he last inspected it, it contained "barely half of a single small midden held together by the roots of a coconut tree." Nonetheless, the location retains its importance as the type site of what Lee referred to as the Jamaican Redware culture. Vanderwal estimated that before its destruction the site may have covered an area of about three-quarters of an acre.

M. de Wolf did not make a plan of the site or any drawing of the stratigraphy. From the largest midden "a sample of about 225 sherds was taken, only 31 were saved." This Little River collection of sherds sufficed for her to identify a "style" different from the Jamaican Meillac, as known for example from Retreat (A13). The site also contained a few shells and six flint artifacts. Five of the 31 sherds belonged to griddles. Salient features of what became a stan-

dard definition, based on the remaining 26 sherds, are as follows. Vessel shapes were tentatively identified as oval, boat-shaped, and hemispherical. Some open bowls had flat bottoms. "The bodies of the vessels rise fairly straight or turn inward slightly at the shoulder" (de Wolf 1953:Figure 85). Five handles were described as either D-shaped or looped (i.e., rising above the rim of the vessel). One lug was described as being "lightly incised with three radiating lines" and "flecks of red paint near the edge" (de Wolf 1953:Figure 86j). "The other main form of decoration consists of paint and rubbing applied to areas of the vessel surface." Eight sherds were painted, seven red and one yellow. "Rubbing gives the sherds a dull mat finish." Comparisons were made to the Cuevas and early Ostiones styles in Puerto Rico. "The contrast between Jamaican Meillac and Little River is sharp." The implication was that there had been a diffusion of the Little River style from Puerto Rico to Jamaica.

References: AJ 1965, 3:1; 1968, 5:1; 1976, 1:10; 1976, 2:1–2; 1979, 1:1; 1980, 2:3; 1984, 3:30; de Wolf 1953:231–234; Vanderwal 1968a:94, 96, 97.

Windsor (A19)

M. de Wolf excavated this site in 1933. It was then the property of A. C. Goff, who at that time ran a small hotel in the vicinity of Fort Windsor, a rectangular earth work and trench that, according to de Wolf, was built by the British in 1803. The location is described as being on a hill overlooking the sea about a mile inland and half a mile east of St. Ann's Bay. Middens are reported to have covered "several acres" and had not previously been excavated. Captain Cotter mentioned some middens to Howard (1950); as de Wolf says (1953) these may be the same middens, but if so the location was not given correctly.

According to her account, M. de Wolf carried out a "partial excavation" of a midden on the western brow of the hill. "No stratigraphical record of finds and no mapping was done. Potsherds were frequently encountered near the ashes of former fires. Shells were abundant and bones and worked stones were present. Of the potsherds found about 5% (28 specimens) were collected." One of these was from a griddle. The analysis of the remaining pieces, published 20 years after the excavation (1953), was conducted in the light of R. R. Howard's thesis (1950) and employed some of his analytical categories. Thus it was found that as a whole the site could be classified as belonging to his "Montego Bay sub-style." Of 17 rim sherds, 14 were "reinforced in typical Meillac fashion." Eight incised sherds were regarded as crucial for the classification, four incised on the rim area (corresponding to a "reinforced" fillet, to judge from the illus-

trations). Two of the sherds were thick and heavy, another criterion supportive of the classification. A carved stone head (perhaps a pestle handle) was found in the streambed below the hill.

Cotter himself was interested in the Fort, and an associated feature described by de Wolf as “a beehive shaped chamber about 10 to 15 feet deep.” He carried out excavations at this location, which have been briefly described (Cotter 1952). Cotter found “a great many Arawak artefacts,” “a few bits of Spanish pottery and bricks,” and “numerous bits” of eighteenth- to nineteenth-century English artifacts. A threefold occupation was therefore demonstrated. He also found “a European bead which might have been a trade bead used by the sailors of Columbus who, in 1503, were marooned only a mile or two away” (cf. Liberty Hill [A16] and Cranbrook [A20]). Lee visited the site a number of times, and describes some of the characteristic artifacts found, including net sinkers of sandstone and limestone, good quality chert from the Montpelier formation, and a limestone ornament (perhaps an ear lobe, plug, or labret) similar to a pendant found at New Forest (T1). Toward the end of his time in Jamaica, he noted that the site was being overrun by squatters’ shacks, a fact he found particularly regrettable because he believed that this (rather than any site to the west of St. Ann’s Bay) corresponded to the Pre-Columbian settlement known as “Maima.”

References: AJ 1973, 3:1; 1977, 2:3; 1978, 1:3; 1980, 2:4; 1982, 1:6; 1985, 1 and 2:5; Cotter 1952; de Wolf, 1953:236–237; Howard, 1950:71.

Upton (A43)

First observed by Sam Hart in 1978, mapped by Lee in 1980. In that year, he reported that the site was located on an undeveloped lot and was little disturbed. “The refuse heaps are comprised mainly of terrestrial snail shells, in places to depths of about one metre, judging by the contours of the middens.” Pottery fragments included numerous pieces with “incised cross-hatched rim and shoulder decorations (and) rim sherds of both plain and filleted styles.” There were also fragments of griddles, celts, and flints (possibly scrapers). He concluded that the archaeological material in general was reminiscent of Coleraine (Y19).

In 1983 John Wilman bought a house on 1 acre of land next to the undeveloped lot, and he noticed that the roadway leading to the house had cut through one of the middens. In the bank at the side of the roadway, he first found two broken bowls, one with alternate oblique and the other with crisscross decoration, hence similar to those already described by Lee. He then found “numerous

pieces of a broken bowl, which had clearly been damaged by the construction of the roadway, and inside it was a small bowl which was complete except that the handle had been broken off.” He subsequently reconstructed both vessels, the height, diameter, and thickness of which are as follows: (1) 12.7 x 31 x 5 cm, (2) 5 x 13/13.5 x 8 cm. Inside the bowls “mixed with the earth and other midden material” were bone fragments and 20 human teeth. Some of the fragments were from a skull, but they were all broken into small pieces and were very friable. There were no beads, tools, ornaments, or other kinds of “grave goods” in the bowls. The teeth were submitted to Ian Jones, a dental surgeon, who reported that 15 were deciduous and five permanent; the latter were partially developed with no evidence of root formation (AJ 1984, 2:10). The teeth (from both the upper and the lower jaw) were regarded as belonging to a single individual between 3 and 4 years old.

In 1986 Wilman excavated a 1.5 x 1.5 m square in the undeveloped lot, to a maximum depth of 40 cm, taken down in four 10-cm levels. He found a total of 2,618 potsherds, including fragments of griddles. Both plain and filleted rims were present, and there were a few typical water jar fragments. Other finds included 20 flint cores and 138 blades, 20 other worked stones, four pieces of coral, and nine shell tools. Two adult human remains were also found: an incisor in level 2, and a right proximal femur of a large individual in level 3. Using the figures for the individual species [rather than the overall totals, which appear to be erroneous: AJ (n.s.) 1992, 6:26–27] Wilman recovered a total of 3,264 terrestrial and 421 marine mollusks. Two thousand, six hundred of the terrestrials consist of Pleurodonts. The remainder includes two freshwater species, *Hemisinus lineolatus* and *Pila fasciata*, which could have been collected from a freshwater source within walking distance of the site. The marine shells are strikingly dominated by six species of *Neritina*, which make up 303 of the total, other common species being *Tectarius muricatus* and *Cittarium pica*. Sylvia Scudder studied the remaining vertebrate faunal remains from Wilman’s dig (1994).

In 1990 a further 1 x 1 m square was excavated by Judith Fandrich (1991) in the same lot. Her excavation reached a maximum depth of 50 cm, taken down in 5-cm levels. She gave no details of the mollusks, except to say that they were primarily land snails, but she presented a quantified analysis of the vertebrate remains found by her. This can be used to supplement the results produced by Scudder, which, with a few exceptions, took the form of a species list only. Fandrich calculated her results in terms of minimum numbers of individuals (MNI), as Wing did for other sites on the north coast such as Bengal

(A8) and Rio Nuevo (Y4), hence the information from Upton can be compared to some extent with those sites. Her total vertebrate MNI came to 75 individuals. Land mammals are mainly represented by *Geocapromys brownii* (*hutia*) with an MNI of 54 in Fandrich's count. She also recorded one peccary (*Tayassu tacaju*). She identified one bird (*Columba leucocephala*), the white-crowned pigeon, and both she and Scudder noted the presence of other unidentified bird bones. In addition, Scudder mentions two specimens of rice rat (*Oryzomys* sp.) and one mouse or rat (Muridae). She also records one land reptile, an Anguid lizard (*Diploglossus* sp.). One sea turtle (Cheloniidae) was mentioned by Scudder. Fandrich found six turtle fragments, which could not be assigned a genus or species name, hence they were given an MNI of 1. The remaining species represented are all fish, with an MNI of 18 according to Fandrich. Scudder mentions 15 species or genera, not all present in Fandrich's collection, but she added four more. These included one cartilaginous fish (Carcharinidae) or shark not mentioned by Scudder. Fandrich comments that while no single fish species dominated her sample, groupers (*Epinephelus*) and parrot fish (*Sparisoma*) were equally distributed. This suggests a predominant concentration on banks and reefs. Other fish present that are indicative of this environment include *Lutjanus* (snapper), Balistidae (triggerfish), Labridae (wrasses), *Acanthurus* (surgeonfish), and *Haemulon* (grunt). All these are present on the other north coast sites. Scombridae (tuna) are indicative of an offshore pelagic environment, although the little tunny (*Euthynnus*) is the one type of tuna that comes in quite close to the shore and would require less effort to catch than the open sea varieties. Inshore fish that occur at other north coast sites are here too, such as *Caranx* (jack), *Centropomus* (snook), Diodontidae (porcupine fish), and Belontiidae (needlefish). Fish not represented at any other of the north coast sites so far include cowfish (*Lactophrys*) and moray eel (*Gymnothorax*). In general, the contrast with Bengal (A8) and Rio Nuevo (Y4) (where bank and reef fish alone account for more than half the MNI) is clear enough. As Scudder and Fandrich say, the inhabitants of this site pursued "a largely land-based subsistence strategy," and insofar as they exploited marine resources they favored fish that lived in "coastal waters and coral reefs."

John Wilman estimated that the site as a whole must once have been at least 3 acres in size, at the end of a limestone ridge, bounded on three sides by fairly steep hillsides. Although the lot adjacent to his former property is still undeveloped, he emphasizes that it is progressively being destroyed by agricultural activities.

References: AJ 1978, 3:10; 1980, 1:1, 4; 1983, 3:20–22; 1984, 2:9–11; Fandrich 1991; Scudder 1994; Wilman 1992–1993.

Bellevue–White River (A45)

First mentioned by Duerden (1897), who recorded that Dr. Plaxton had discovered “an accumulation of shells associated with fragments of coarse pottery” at this site. Originally Lee assumed that Duerden had been referring to what he called Bellevue–Chalky Hill (A21). In 1982 he recognized his mistake, and he mapped the site as A45. Lee observed that the site contained “tremendous amounts of terrestrial snail shells and occasional potsherds of White Marl type.” “The depth of deposition indicates that this site was occupied over a lengthy period of time.”

Lee found a small oval disk of gold on the Bellevue Estate in April 1982. According to him, part of a crescentic midden by the driveway had been bulldozed away, and the artifact was discovered in a heap about 10 m distant from its original location. It is 21 x 16 mm in size and weighs .596 g. “The object is highly polished on one side, which is slightly convex. On the reverse, the surface has a semi-polished matte texture.” A design made of incised lines and fine punctuation marks was applied to the reverse, but showed through to the obverse as well (Appendix 16). “Its edges are rough, as though deliberately left that way to better grip the bitumen or resin which was probably used to set it into a sculpture to represent an eye or to brighten an ear.” The use of small oval disks of this kind for such purposes is well attested in Spanish accounts (Alegría 1985).

Microscopic examination revealed that the metal was cold-hammered from a natural nugget, a practice that was followed in Taíno times. Its chemical composition was determined in Madrid by the ICCR (Instituto Central de Conservación y Restauración de Obras de Arte) and was reported by Salvador Rovira as follows: gold 92.5, silver 7.2, nickel .24, iron .036 percent. According to Lee, the unusual occurrence of nickel in the alloy points to the Dominican Republic as the original source of the gold, because the alluvial gold-bearing gravels in that country occur in close proximity to nickeliferous laterites. Norman Russell, chief geologist at the Rosario Mines in the Dominican Republic, disputed this identification, but it has been generally accepted. The gold disk was handed over to the Institute of Jamaica in November 1983, and is now on display at the Bank of Jamaica (Aarons 1985; Lee 1985).

In 1991, J. P. Dering, J. K. Southerland, and J. Fandrich excavated the site.

The first two authors submitted both a published and an unpublished account (Dering 1992; Dering and Southerland 1991), the third did not. The faunal remains discovered were not analyzed. Five hundred test pits 25 x 25 cm were excavated at 10-m intervals across a 14-acre area on the estate. More extensive excavations were carried out in three areas.

- (1) North of the Great House. Three units of 2 x 1 m and two units of 1 x 1 m were excavated. Both prehistoric and historic artifacts were found. The unit closest to the Great House was discovered to be a Taíno refuse midden, with a substantial amount of charred plant remains.
- (2) A mound area extending from the graveyard southwestward across the driveway down the hill. Twenty-four units of 1 x 1 m were excavated to bedrock. There were indications that here there may have been two periods of prehistoric occupation. A lower layer occurred directly on red tropical soil, separated from an upper layer by a horizon of limestone rock that extended throughout the area excavated.
- (3) One isolated test pit located downhill and south of the “main midden area” (2) in the pasture across the main road to the estate. “This pit revealed a very deep deposit (over 80 cm) of the same reddish soil layer on which the Taino village was established.” The suggestion was that “as the Taino cleared the forested area for cultivation, the ensuing erosion caused the soils to be washed down to the bottom of the hill.”

The ceramic analysis presented by Dering (1992) is based upon 19 field samples collected from five units in what he refers to as “area C.” Since there are no more than five units, presumably this corresponds to (1) the area north of the Great House (though there is no mention of historic artifacts). From this area 1,278 sherds were recovered, including one almost complete undecorated bowl with a maximum diameter of 44 cm at the shoulder. Thirty-nine were fragments of griddles. One hundred ninety-eight of the remaining pieces (43 rims, 155 body sherds) were decorated, while 1,040 were plain. That is to say, in Dering’s view, undecorated bowls would have dominated the assemblage. Taking rims and body sherds together, decorative patterns recognized included single and double row punctate dots (14), diagonal incised lines that might or might not intersect (12), and narrow lines forming a “W” (25). Many of the vessels were filleted but no figure was given for this. There were 20 lugs, including one “sigmoid” applied design on the shoulder of a bowl, but no zoomorphic designs. All the designs were located on the upper portion of the ves-

sels, between the shoulder and the rim. There were no boat-shaped vessels, water containers, or figurines. The temper was composed of marine shells, quartz, ground limestone, and land shells. The quartz was taken to represent marine sand, hence neither of the first two elements could be regarded as local. In Dering's view, this indicated some kind of contact with the coast (14 km distant), either through trade or travel. The elements could have been derived from the grog of broken pots made on the coast.

The ceramic assemblage as a whole was characterized as Meillacan, in agreement with Lee's assessment. No date was obtained, but in Dering's view this was probably a late settlement, when as the population on the island increased people moved inland, often following major streams. He suggested that the "reduced complexity and simplified design" of the Bellevue ceramics reflected the social isolation of a marginal horticultural village located on what for the inhabitants will have been poorer land.

References: Aarons 1985; AJ 1968, 5:1; 1982, 2:7; 1983, 4:33–40; 1984, 1:6; 1984, 2:9, 12–13; 1984, 4:42–43; Alegría 1985; Dering 1992; Dering and Sutherland 1991; Duerden 1897:20; Lee 1985.

Clarendon

Braziletto (C2)

Excavated by Howard in 1947. According to him, the site does not correspond to the one mentioned by MacCormack (1898) as being "on the top of a portion of the Braziletto Hills" but only "about a mile from the sea." Vanderwal stated that the sherds from the excavation were deposited in the Institute of Jamaica, and he incorporated them into his study of the Jamaican south coast stratigraphic sequence (Vanderwal 1968a:Figure 6). Mapped by Lee in 1967.

Howard's excavations were carried out over four days at the invitation of the West India Sugar Company. Howard referred to the site as Salt River or Hillside Farm. The excavations took place in three localities separated from one another by distances of approximately 70 and 46 m. Two 5 x 1 m trenches were put down in localities 1 and 3 and one of the same size in locality 2. Bedrock was reached at depths of 35 to 40 cm in locality 1, and 25 cm in locality 3, and the finds from these areas were relatively few. The "only find of importance" at locality 3 was a well-weathered fragment of human tibia, unblackened and very fragile. The trench at locality 2 reached a depth of almost 1 m and produced the bulk of the material. According to Howard, "the cultural debris was scattered more or less uniformly throughout the deposits with no evidence of strati-

fication or intermittent occupation.” There were no pockets of ash or charcoal, nor were any of the bones or shells burned. Howard noted large quantities of potsherds and some celt fragments as well as pieces of coral. Apart from shells, the fauna consisted of “coney bones, fish spines, turtle and bird bones.” He interpreted the site as a whole as an “excellent example” of the Taíno pattern of “moving from midden to midden within a given site,” alternatively it may have represented “an occupation of considerable size but relatively brief duration.”

References: AJ 1967, 4:2; Howard 1950:51–55; MacCormack 1898:446; Vanderwal 1968a:82–85 and Figure 6.

St. James

Hartfield (J1)

Regarded by Lee and others for many years as the equivalent of the Mammee Hill site described by Duerden (1897:16–17). In 1983, however, Lee came to the conclusion that Mammee Hill really corresponds to Tryall #1 (J20), and that this site should be designated Hartfield. Mapped by him in 1963, bush clearing in 1973 showed that it was somewhat more extensive than originally thought. Excavated by Vanderwal in 1966 under the name Mammee Hill. Said by him to be 8 1/2 acres in extent (rather than the 4 or 5 acres reported by Duerden for his Mammee Hill) with “many shallow middens.” Vanderwal (with three assistants) excavated parts of the site, digging three 5 x 5 ft trenches. Midden depth was found to be “very shallow,” not over 1 1/2 ft. *Hutia* was reported abundant. Shell remains were mostly bivalves (*Codakia* and *Lucina*) reflecting a “coastal sandy environment.”

Vanderwal’s analysis of the pottery from his excavations “provided a control” for his seriation of sites on the north coast (Vanderwal 1968a:Figure 7). This material, regarded as representative of the Montego Bay style, has been reexamined by P. Allsworth-Jones, Michele Bogle-Douglas, and Kit Wesler, who submitted a report on it to the 21st International Congress for Caribbean Archaeology, meeting in Trinidad in 2005.

References: AJ 1966, 8:1; 1967, 12:1, 2; 1973, 4:2; 1982, 1:6; 1983, 2:18; Duerden 1897:16–17; Vanderwal 1968a:53–55 and Figure 7

Fairfield (J3)

Also referred to as Fairview. First reported in 1931 under the name St. James Country Club Montego Bay (Cundall 1939), said by Vanderwal to cover an area of nearly 4 1/2 acres on a hilly prominence overlooking the Bogue Is-

lands. According to him, the site was largely destroyed in the 1930s by the country club's building and landscaping activities. Large quantities of pottery were recovered at that time, and deposited in the Institute of Jamaica, but they were subsequently lost. This must have happened after they were studied by Howard, who described the pottery as "quite distinctive from the usual Jamaican ware." Mapped by Lee around 1967. In 1970 by careful excavation he recovered "almost intact" a bowl of Montego Bay style, 18 cm in diameter, which had been exposed at a road edge.

More extensively excavated by Vanderwal in 1966. In that year (with three assistants) he excavated what he described as one remaining "practically intact" midden, by digging five contiguous 3 x 3 ft test pits on a talus slope. The stratigraphy below the overburden was said to be undisturbed, and sterile soil was reached at a depth of about 3 ft. Originally, in his estimation, the midden may have been up to 5 or more feet deep, since the top part of it had been removed. Three distinct cultural layers, in addition to the overburden, were defined, including two upper ones of ash, separated by a layer of sterile marl, and a basal layer. Dominant bivalves were *Pinctada* and *Isognomon*, conchs were also quite common (*Strombus pugilis* and *raninus*).

The excavated material from Fairfield (divided into units H, A-I, and A-II) was used by Vanderwal as a stratigraphic support for his seriation of the sites on the north coast (Vanderwal 1968a:Figure 7), in addition to the excavated material from Bengal (A8) and Hartfield (J1). This material, regarded as representative of the Montego Bay style, has been reexamined by P. Allsworth-Jones, Michele Bogle-Douglas, and Kit Wesler, who submitted a report on it to the 21st International Congress for Caribbean Archaeology, meeting in Trinidad in 2005. Excavations at the site in 2006, conducted by P. Allsworth-Jones and I. Conolley, revealed intact deposits, so it would be premature to regard the site as completely destroyed.

References: AJ 1967, 12:1; 1970, 2:1; 1982, 1:6; Cundall 1939:19; Howard 1950:57–58; Vanderwal 1968a:50–53 and Figure 7

Cinnamon Hill (J10)

Located and mapped by Lee in 1967. Excavated by Father Osborne in 1974. As described by Lee, "This is a typical hilltop village with the midden material principally on the peripheral slopes just beyond the edge of the flattish area at the top of the hill." The maximum depth of deposit recorded by him was 29 in, and he estimated that the hilltop and adjacent slopes containing midden material occupied an area of about 1.5 acres.

During Father Osborne's excavations, the site was pegged out in 5-ft squares. Six complete and two half such squares were excavated in the southwest portion of the site, a total of about 175 square feet (Appendix 25). The site was excavated in two levels, 0 to 10 inches and 10 to 20 inches in depth. The subsoil was whitish gray marl above limestone bedrock. All material was sieved through a 1/8-in screen.

About 5,000 potsherds were recovered. Six hundred twenty-seven rims and decorated pieces were analyzed in detail, and the frequency of certain characteristics was established for the two levels (Appendix 26). An increase in filleted rims and incised decoration in the upper level was noted. In general the style was defined as "White Marl with Montego Bay sub-style features."

K. F. Johnson analyzed the fauna. In squares 1–8 she identified a total of 793 bones belonging to 21 species (Appendix 27, reproduced here at Table 24). Only one land mammal was identified, the *hutia* (*Geocapromys brownii*). One mandible was tentatively identified as an iguana (*Cyclura collei*) and one vertebra as a snake (*Alsophis ater*), though C. B. Lewis queried the first of these identifications. At least two sea turtles (Cheloniidae) were present. The remaining 17 species are fish, predominantly tuna (*Thunnus* sp.), grouper (*Epinephelus* spp.), parrot fish (*Sparisoma* sp.), and squirrelfish (*Holocentrus* sp.). As Johnson says, this indicates exploitation of deep-sea resources as well as banks and reefs. The fact that very few burned bones were found indicated to her that boiling, steaming, or drying were the favored cooking methods.

If the minimum number of individuals (MNI) present for the various species are divided into habitat categories, as suggested by Silverberg et al. (1972; cf. Table 23, Johnson 1976:16), the results are as follows: land 18 (11 percent), beaches 2 (1 percent), inshore 13 (8 percent), banks and reefs 105 (65 percent), offshore 24 (15 percent). The predominance of fish caught on banks and reefs is striking.

The mollusks were analyzed by Lee. Two thousand, nine hundred fourteen belonged to 11 marine species, and 3,248 to six terrestrial species, a grand total of 6,162. An increase in the proportion of terrestrial species was noted in the upper level (Appendix 28). The marine species are dominated by *Codakia orbicularis* and *Arcopagia fausta*, while the terrestrial species are mainly Pleurodonta.

A single human burial was discovered at a depth of 20 in. "Although the bones were rather poorly preserved, it was possible to observe that the body had been interred carefully in a flexed position lying on its left side and with

Table 14. Radiocarbon Dates for Cinnamon Hill.

350 ± 90 B.P. (A.D. 1600 ± 90)	human skeletal material, burial 20" deep
625 ± 195 B.P. (A.D. 1325 ± 195)	charcoal, upper stratum (0–10" deep)
935 ± 180 B.P. (A.D. 1015 ± 180)	charcoal, lower stratum (10–20" deep)

the head toward the north." According to F. L. Jaywardene, the skeletal material consisted of one mandibular fragment, 15 loose teeth from both upper and lower jaws, and 10 postcranial fragments, all belonging to one individual. The teeth showed a great deal of attrition. The postcranial fragments showed "good muscle markings and give evidence of a physically active robust individual," with no evidence of disease. Since the mandibular fragment was relatively slender, Jaywardene concluded that this was probably a female, although no age estimate was given.

Three radiocarbon dates from the excavations were obtained by Robert Carr (Miami) and reported as follows, without laboratory numbers (AJ 1981, 2:8) (Table 14).

The dating evidence for the burial cannot be considered satisfactory, since it is not consistent with the two radiocarbon dates obtained on charcoal from the upper and lower strata. No details were given of the laboratory procedures employed. The two dates on charcoal correspond to calibrated ranges of ca. A.D. 1160–1490 and 975–1275 respectively.

References: AJ 1967, 4:1; 1967, 12:1, 2; 1974, 1:1; 1974, 2:1, 2 and Figure 1; 1974, 3:1, 4; 1978, 4:2; 1981, 2:8; F. J. Osborne, J. W. Lee (1976) Preliminary Report on the Cinnamon Hill site (J10), AJ 1976, 1:1–8; K. F. Johnson (1976) A Preliminary Faunal Analysis of Cinnamon Hill, Jamaica, AJ 1976, 1:9–18; C. B. Lewis (1976) Discussion on Cinnamon Hill, AJ 1976, 3:2; F. L. Jaywardene (1977) Skeletal Material from the Cinnamon Hill Site (J10), AJ 1977, 2:1–2; Silverberg et al. 1972:18–35.

Kingston and St. Andrew

Jack's Hill (K1)

Mapped by Lee in 1965. According to Vanderwal, the site was first located by C. B. Lewis. He stated that midden depth was "shallow," about 2 ft. In 1973 Lee reported that a new apartment building had been erected at the east end of the site, but that little or no damage had been done to the Arawak material.

No further information is provided in “Archaeology Jamaica,” but according to Vanderwal, Lewis Purnell carried out “limited” excavations at the site before 1968.

There is a large collection of material from the site, including abundant faunal remains, in the storeroom of the Jamaica National Heritage Trust; this material must have been excavated, but it is not clear when or by whom. It does not seem likely that this is Purnell’s collection.

References: AJ 1965, 4:1; 1973, 4:2; Vanderwal 1968a:88–90.

Norbrook (K5)

Mapped by Lee in 1965. As Duerden reported (1897), the site was originally excavated by Lady Blake in 1890. It was said to be “on a little table-land sloping down” to a bank “some 16 or 18 feet in height” on the eastern side. “In digging into this bank layer upon layer of shells were to be found,” together with pottery, stone tools, and animal bones. Lee’s sketch plan indicates that by 1965 the greater part of the site had been eroded away, and it has since suffered further damage. The site is bounded on the southeast by Norbrook Gully, a tributary of Sandy Gully. According to Duerden, the vertebrate bones were mainly *hutia*, with some remains of fish and turtles. Predominant shells included *Melongena melongena*, *Strombus pugilis*, *Turbo pica*, *Murex brevifrons*, three species of *Arca*, *Ostrea parasitica*, and *Chama lazarus*.

Unfortunately the information available about the 1890 excavations is limited. According to Vanderwal (1968a), Lady Blake’s report was no more than “an imaginative exercise in interpretation of the way of life of the Indians.” The excavated material was sold to the Heye Foundation in New York.

References: AJ 1965, 1:1; Duerden 1897:13–14; Vanderwal 1968a:15–16.

Martello Tower (Fort Nugent) (K6)

Catalogued under both names in “Archaeology Jamaica.” The Pre-Columbian site is referred to as being “beside” the Martello Tower, and on Lee’s map it appears between the tower and Fort Nugent. Mentioned by Cundall (1939) as having been first reported by Major Cave, in 1916 according to Howard (1950). Fort Nugent was originally named Fort Castile, after James del Castillo, who constructed it in 1693. The Martello Tower, 700 yards to the north, was constructed in 1806–1808, and is in fact at a higher elevation than the fort. Frank Cundall’s *Historic Jamaica* (1915) contains a drawing of Fort Nugent as it appeared in 1908 with “the old guns lying about in picturesque confusion” (Appendix 42). The Fort was destroyed in 1960 at the time of the

construction of the Harbour View housing estate (Lechler 1972). Lechler's collection of artifacts from the site (not Fort Nugent itself) was studied by V. Wallace and published as coming from Harbour View (1992). According to her (internally inconsistent) figures the ceramic collection consisted of 365 potsherds, one complete vessel, and two figurines. In addition there were 27 chert artifacts, and 10 others (eight limestone and two sandstone; identifications by S. Donovan) including grinding stones and net sinkers.

An excavation took place over five days in 1991, "in the immediate vicinity" of the Martello Tower, with a crew of 12 students, directed by Basil Reid (1991). The crew laid out 2 x 2 m squares, but it is not known what the results of the excavation were.

References: AJ 1965, 4:1; 1965, 10:1; 1974, 3:5; 1974, 4:4; 1984, 4:41; Buisseret 1967a, 1968a; Cundall 1915:215; 1939:18; Howard 1950:79; Lechler 1972; Lewis 1960; Reid 1991; Wallace 1992.

Tower Hill (K7)

First located by J. S. Tyndale-Biscoe. Mapped by Lee in 1966. His sketch plan includes a note stating that at that time the visible deposits were from 2 to 5 ft deep. Reported by Vanderwal to be 3 1/2 acres in size "with several small middens." The Hope River "could have been used as a relatively easy access corridor to the sea."

Excavated by R. P. and A. K. Bullen in 1961. A test trench was dug on the eastern slope where the cultural deposit was 18 in thick. A hearth 3 ft across was located at a depth of 1 ft. Five hundred sixteen potsherds were listed, including five "boat ends," one neck of a water bottle, and 21 fragments of griddles. According to C. B. Lewis, R. R. Howard, and R. Vanderwal, the ceramic specimens differed "in no significant way from those at White Marl." Nonetheless, R. P. and A. K. Bullen considered that the pottery could be divided into two main series or styles. One was termed Meillacan (after the site of that name in Haiti), whereas the other was compared to Santa Elena (in Puerto Rico). Lithic artifacts included hammerstones and sandstone sharpening stones as well as polished celts and chert flakes. The sharpening stones were said to have "multiple wide but shallow sharpening grooves on both upper and lower surfaces." On the basis of the incomplete list provided, the shells included *Strombus pugilis*, *Fasciolaria tulipa*, *Murex*, *Vasum muricatum*, and *Arca*. According to E. S. Wing, the vertebrate fauna included *hutia*, birds (heron: Ardeidae; purple gallinule: *Porphyryula martinica*), sea turtles (Cheloniidae), sharks (Lamnoidei [Lamnidae], Scyliorhinoidei [Scyliorhinidae]), and fish (Nassau grouper: *Epi-*

nephelus cf. *striatus*; snapper: *Lutjanus*; and barracuda: *Sphyræna*). There was an evident heavy dependence on seafood for protein.

References: AJ 1966, 2:1; 1966, 3:1; Bullen and Bullen 1974; Vanderwal 1968a:90–93.

Chancery Hall (K11)

Included by Lee in his final list of sites but not mapped by him. It has been known for some time, because C. B. Lewis reported to Howard (1950) that there was “an extensive and relatively untouched midden site” at this location, which they were unable to visit. In fact, the site was not investigated until after 1990, when it was divided into lots and sold for development. G. P. Lechler (2000) has given an account of the first discoveries made since that date, particularly in the area of Horatio Drive. According to him, seven burials were located, with some associated beads. The fauna included the skull of a young manatee. Apart from pottery sherds and fragments of griddles, finds also included petaloid celts, grinding stones, pendants, and figurines of clay and sandstone. A piece of galena (lead-zinc ore) probably indicates connections to Kintyre east of Papine where this material was until recently mined. A charcoal sample was recovered from the deposits just north of Horatio Drive near the boundary between lots 340 and 339, and in 1992 a radiocarbon date was obtained on it of 690 ± 50 B.P. (Beta-53703), corresponding to a calibrated range of ca. A.D. 1280–1380. Excavations at the site were first undertaken in 1996 by a team from the Jamaica National Heritage Trust headed by S. Walters. Six 1 x 1 m test pits were dug, five north of Horatio Drive and one south of it. A further burial was located in lot 338. A second small excavation took place in 1998 as a joint project between the University of the West Indies and the University of Leicester, when a 1 m square was excavated in lot 340, and a section was cut in lot 386, by the boundary wall between it and lot 340 (Allsworth-Jones et al. 2001). A visit to the site in 1999 revealed that there were still many artifacts and other traces of human activity eroding from the sediments in lot 340, including five human teeth.

According to the JNHT field report concerning the excavations of 1996, prepared by S. Walters, test pits 1 and 2 were located in lot 338, 3 and 4 in lot 339, and 5 in lot 340 (all north of Horatio Drive), while test pit 6 was in lot 308 (south of Horatio Drive). The maximum depth of deposit in test pit 1 was 90 cm, and in test pit 3, 110 cm, whereas the others varied between 40 and 60 cm. A few historic artifacts (mostly glass bottles) were encountered near the surface in test pits 2 and 5, but the overwhelming bulk of material was Pre-Columbian. A large part of a griddle, including the rim, was exca-

vated at a depth of about 50 to 60 cm in test pit 3, associated with an ashy deposit containing many marine and terrestrial shells. In test pit 1, at a depth of 59 to 71 cm, the remains of a burial were partially uncovered, but they were not removed because they still extended back into the south and east walls of the pit.

In 1998, the 1 m square excavated in lot 340 (to a depth of 15 cm only) produced (apart from shells) 96 fragments of potsherds and one limestone flake. In addition, the section cut in lot 386 revealed a clear occupation layer 3 with an abundance of shells and artifacts comparable to those from the excavated square (Appendix 22). There were 23 potsherds, 15 chert flakes, and one limestone core. The shells present in these two locations have been reported in full (Allsworth-Jones et al. 2001) (Appendix 23). Five of the marine species account for 90 percent of the total marine species recovered. Since these are largely inhabitants of mudflats, it is highly likely that the Chancery Hall people collected their shellfish from what is now Kingston Harbour. A complete sample of deposit from layer 3 was analyzed microscopically at the University of Leicester (Gouldwell 1998). It was concluded that the deposit represents a midden of food waste, primarily of fish, mammal (*hutia*), and shells, with charcoal fragments from a cooking fire. The insects and seeds that were detected seem to be contaminants from more recent levels.

References: Allsworth-Jones et al. 2001; Gouldwell 1998; Howard 1950; Lechler 2000; Walters 1996.

Bellevue–Mannings Hill (K13)

Mentioned by Cundall in 1915 and in 1939 (the second time erroneously as a cave) but not investigated until 1972 when the land to the west of Bellevue Great House was sold and divided into lots for building purposes. Finds discovered by visiting amateurs included two complete bowls (one circular, one boat shaped), a miniature celt (1 1/2 x 1/4 in, in size), a spindle-shaped artifact of rhyolite porphyry (probably a pendant, but incompletely polished and lacking the usual perforation: AJ 1977, 2:Figure 1.3), a transparent pinkish amulet of “rose quartz” [which must according to J. Roobol have originated from the interior mountains of the northern mainland of South America; cf. the pendant found at Great Pedro Bay (E4)], a sandstone axe head, a flat sandstone platter, and a sandstone figurine somewhat resembling an owl (AJ 1986, 1 and 2:6). As at Chancery Hall (K11), a piece of galena (lead-zinc ore) probably indicates connections to Kintyre east of Papine. Lee commented that the site’s “healthy location” among pockets of deep loose soil made it advantageous for the cultivation of crops such as cassava, sweet potatoes, tobacco, maize, and pimen-

tos. Excavated by C. W. Medhurst and H. Clarke in 1974–1975, and by C. W. Medhurst and J. Wilman in 1976–1977. Mapped by Lee in 1972, but his sketch plan is superseded by the plan of the area drawn up at the close of excavations at the site. Prior to the first excavation, workmen digging a foundation trench discovered a burial. The burial was extremely shallow, only 12 in from the surface; the body was said to be “supine” but the legs were “flexed.” The remains were examined by Kathleen Rodriques-Hastings, who determined that this was probably an 18-year-old male. The front of the skull was not flattened and the estimated height of this young adult was 5 ft 10 in; both these facts led Medhurst to conclude that this may not have been an Arawak. However, parts of a further skull were found a few inches away, and this was “markedly flattened in the usual Indian fashion.” A chalcedony bead (apparently also of the usual Indian type) was found by the neck of the main burial (AJ 1976, 4:Figure 9G). Prior to the second excavation, workmen digging foundations discovered two “pot burials,” but they were removed before they could be examined. In 1986 it was reported that following further house building, the site had “for all practical purposes ceased to exist.”

Excavations were conducted in two parts of the site, the northeast portion in 1974–1975 and the southwest portion in 1976–1977 (Appendix 7). Excavation proceeded by means of 5-ft squares, of which there were seven in the northeast and 19 in the southwest, giving a total excavated area of 650 ft². In the northeast portion a definite stratigraphy was observed, with seven stratigraphic layers, 2, 4, and 6 corresponding to cultural layers 1, 2, and 3. Cultural layer 1 was thin and sparse, but cultural layers 2 and 3 were not. With maximum thicknesses of 22 in and 11 in respectively they produced the bulk of the material from the site (Appendix 8). These layers were separated from one another by strata of “clean red earth.” No such stratigraphic division was detected in the southwest portion of the site, which was dug to a maximum depth of 30 in. Here, however, was found a circular arrangement of postholes convincingly interpreted as a house foundation (Appendix 9). The postholes were clearly visible in a layer of hardened earth at a depth of about 9 in. The diameter of the circular house was about 15 ft. Because of the presence of a number of potsherds with filleted rims, it was assumed that the house belonged to a comparatively late stage of occupation.

The two areas together produced a substantial number of artifacts. Combined, there were a total of 1,267 potsherds and 13 griddle fragments. The great majority was red-brown (including one pot leg), but there were 12 buff-yellow sherds (indicative of water jars). Samples of both were tested by X-ray diffraction, and Sedley Williams determined that there was little difference be-

tween them, except for the increased occurrence of feldspars in the red-brown variety. There were 32 stone celts and one of shell. The majority of the raw material for the stone celts comes from the Above Rocks inlier and the Blue Mountain inlier, although other source areas include the Wagwater Belt. There were 149 chert flakes, 19 hammerstones, one anthropomorphic figurine of poorly cemented calcareous grit (AJ 1976, 3:Figure 12C), and 11 other lithics. There was one chalcedony bead and five pendants or other ornaments, including one made of vegetable gum, possibly from the *lignum vitae* tree (AJ 1976, 3:Figure 12B). It is claimed that there were two eyed needles made from fish bones (AJ 1976, 3:Figure 12E).

E. S. Wing analyzed the vertebrate fauna from cultural layers 2 and 3 of the first excavation (Appendix 10, reproduced here at Table 23). There were 1,207 identifiable fragments belonging to 16 species, corresponding to a minimum number of individuals (MNI) of 126. One thousand, one hundred sixty-five of the fragments and 103 of the MNI belonged to *hutia*. Wing calculated that 88–89 percent of the total including *hutia* belonged to land species. Both in 1974–1975 and in 1976–1977, “representative samples” of mollusks were collected from the relevant squares and layers. The first excavation produced 19 marine species and five terrestrial, the proportions of the latter increasing in cultural layer 2 as compared with layer 3. The second excavation produced 27 marine species and (the same) five terrestrial. Taking the two sets together, the commonest species represented included *Melongena melongena*, *Neritina piratica*, *Neritina reclinata*, *Neritina virginea*, *Anadara ovalis*, *Arca zebra*, *Chione granulata*, *Codakia orbicularis*, *Ostrea frons*, and *Anadara brasiliensis*. All except the last are found at Chancery Hall, and in that case, the indications are that these shells came mainly from what is now Kingston Harbour.

References: AJ 1972, 2:1–3; 1972, 3:1–2; 1973, 1:2; 1973, 2:2; 1974, 2:2–3; 1977, 2:3, 5; 1978, 4:2; 1980, 2:5; 1981, 1:1–2; 1986, 1 and 2:2, 6; Medhurst (1976) The Bellevue Site, AJ 1976, 3:3–12 and AJ 1976, 4:12–40; Wing (1977) Use of Animals by the People Inhabiting the Bellevue Site, AJ 1977, 1:2–7; Medhurst (1977a) K13 Bellevue—Analysis of Mollusc Shells, AJ 1977, 1:8–9; Medhurst (1977b) Bellevue (K13) Phase II, AJ 1977, 3:1–9, 12–19; Cundall 1915, 1939.

Manchester

Rowe's Corner (M3)

Mapped by Lee in 1964. Situated east of the Duff House Property Great House, described as a “White Marl type village.” Lee collected “numerous water jar

handles” in 1967 following a brush fire. In 1973 the entire site was said to be under cultivation, but nonetheless in 1978 some finds were made, including a pottery spindle whorl (a disk about 3.5 cm in diameter and 1 cm thick, perforated by a .5 cm hole at the center).

Lewis Purnell excavated a 6 x 6 ft pit at the site during one week in 1966. A plan and section were drawn but have not been published. The highlight of the work was said to have been the discovery of “a complete burial at a depth of 4 feet 4 inches in the midden, accompanied by an undamaged round bowl bearing alternate oblique incised decoration.” It must have been near the base of the sequence, since, according to Vanderwal, bedrock was encountered at a depth of about 4 1/2 feet. Large numbers of *Strombus gigas* and *Melongena melongena* were encountered.

An analysis of pottery from this site (using the excavated material from five successive units) provided a control for Vanderwal’s Jamaican “south coast ceramic chronology” (Vanderwal 1968a:Figure 6).

References: AJ 1966, 8:1; 1967, 5:2; 1967, 8:1; 1967, 12:1; 1973, 4:1; 1978, 3:11; 1981, 1:8; Vanderwal 1968a:77–79, 123–124, Figure 6.

Bottom Bay (M4)

Referred to by Lee as Alligator Pond, but renamed by Vanderwal to avoid confusion with similarly named sites (E1 and E5). On the eastern (rather than the western) side of the Alligator Pond river, and thus just inside Manchester parish. Mapped by Lee in 1965. First located by Brother Michael and R. Anderson. In 1965 Lee noted that “deposition of midden material is rather shallow, but at least 6 or 7 middens may be practically intact.” He found that the pottery consisted “partly” of Redware, with some ornately decorated handles, including alligator, shark, and manatee (?) motifs. The importance of the site was immediately apparent to him, since “all other occurrences” of Redware were apparently disorganized due to “storm action close to sandy beaches.”

Lee mentions that, among other things, three beads were recovered from the site, as follows. (1) Milky agate, elliptical, pierced longitudinally. (2) Gray chalcedony, pierced transversely near one end, with a further longitudinal hole; faint incised lines were visible on one face of the squarish head; dimensions 19 x 13 mm. (3) Nephritic jade, beveled; dimensions 7 x 5 mm. There was also a nephritic jade pendant 17 x 8 mm in size, pierced by a transverse hole about 2 mm in diameter, 3 mm from one end. So far as Lee was aware, this type of nephritic jade is not native to Jamaica.

Finally, Lee found an earthenware pottery “stamp” in the shape of a trun-

Table 15. Bottom Bay Artifacts as Classified by Vanderwal.

Attribute	No.	%
Plain polished buff ware	213	62
Red slip above the shoulder	58	17
Looped handles	24	7
Strap handle	14	4
Incision on red slip decoration	3	1
Modeled <i>adornos</i>	31	9

cated cone 2 cm high with a circular base 2.3 cm in diameter (Appendix 11). As he says, “the underside of the base has a pattern of 10 radiating slivers surrounding a 3 mm circular hub.” He suggested that it was a device for use with a damp pigment to daub the skin, the first such artifact reported from Jamaica (though known elsewhere in the eastern Caribbean).

Vanderwal excavated the site in 1966. “Accompanied by a crew of 5 assistants, I dug ten 5 x 5 foot pits in 4 different but contiguous middens.” Midden depth was at most only about 10 inches. “In between the sea and the midden is a creeping sand dune which may have covered some of the midden area and in future may well obliterate the remainder.” Three hundred forty-three decorated rim and body sherds were collected. In terms of mutually exclusive attributes, Vanderwal analyzed them and the data appear in Table 15.

A radiocarbon date of A.D. 650 \pm 120 (1300 \pm 120 B.P.) was obtained for the site from the Yale University radiocarbon laboratory (Y-1987). This corresponds to a calibrated range of ca. A.D. 645–880.

References: AJ 1965, 2:1; 1965, 3:1; 1966, 3:1; 1967, 8:3; 1976, 2:2–4; 1979, 1:2; 1981, 3:4–5; Vanderwal 1968a:96, 99–100, 129–130.

St. Thomas

Belvedere #1 (O1)

Mapped by Lee in 1967. Northwest of Belvedere House. In 1975 the owner, Mr. Hopwood, dug several exploratory test pits, but these were not described in detail. Lee characterized the pottery as being “of the White Marl style, especially noteworthy for the abundance of punctate decoration and the evidence of legs to support the bowls or dishes.” Captain Cotter collected a pendant from the site, with finely incised lines at top and bottom, and Hopwood later found pieces of three petaloid celts.

In 1965 Vanderwal, with a crew of five assistants, excavated portions of the site “in an effort to explain the existence of some 35 roughly circular depressions in an area of about three acres.” “It was found that the depressions were without question prehistorically dug but not as house sites.” Vanderwal’s suggestion was that they represented “a moisture catchment system for agriculture during the dry season.” He came to this conclusion for two reasons. (1) The detritus forming the edges of the depressions consisted of redeposited old midden refuse, underlying sterile soil and basal marl, surmounted by accumulated deposits after the depressions had been dug. (2) The depressions themselves had been dug to marl, after which a thin mantle of soil had been spread over the bottom. He suggested the depressions were probably dug in connection with the cultivation of maize. Vanderwal reported that, with the exception of a single shell of the genus *Cassia*, all others recovered were land snails and diminutive *Melongena melongena*. “Few other remains were found.”

References: AJ 1965, 5:1; 1967, 2:1; 1967, 3:1; 1975, 4:7–8; 1977, 2:4 and Figure 1.2; 1986, 1 and 2:3; Vanderwal 1968a:40–43.

Spanish Wood (Duckenfield) (O2)

Reported in the literature under both names. C. S. Cotter informed Howard of the existence of the site, which according to him consisted of “a large number of middens over an area of several acres.” Mapped by Lee in 1966. He later commented that it occupied a large ridgetop and that it was a village of “White Marl type.” All flat arable land for a considerable distance around has been intensively cultivated for the past 200 years. Cotter originally suggested that this might well be the village at “the easternmost cape of the island” ruled by a cacique named Ameyro, who was visited by Diego Mendez in 1503 during Columbus’s fourth voyage. Mendez’s first dealings with the cacique were friendly, but when he returned to “the cape at the tip of the island” before sailing to Hispaniola he was threatened with death. Following a suggestion by R. E. and M. P. Alegría, Lee concluded that the second incident might well also have taken place at this site. According to the version of Diego Mendez’s account used by him, the Amerindians “wagered a ball game” to decide who would kill the Spaniard, and on this basis Lee proposed that there might have been a ball court here. J. M. Cohen’s version, however, merely says that “they drew lots for my life.” When Vanderwal first visited the site he stated that it was the “second largest” on the island, covering an area of over 10 acres.

In 1968 Vanderwal dug six test pits at the site and one trench 15 x 5 ft in size. “Deposits were slightly over 4 feet deep.” Forty-eight “collections” were

obtained. "There were no notable finds," although it was expected that "interesting pottery design elements" would be detected during the subsequent analysis, an analysis that was never reported.

References: AJ 1965, 9:1; 1966, 6:1; 1967, 2:1; 1979, 2:4–5; Howard 1950:75; Vanderwal 1968a:92–95; 1968d; Cohen 1969:311–312, 314.

Bowden (O9)

First discovered and described by J. S. Tyndale-Biscoe, on the steep slopes of a hill south of Bowden Wharf. Mapped by Lee in 1966. Tyndale-Biscoe described it as "an Arawak kitchen midden with an individuality all its own," on account of the style of its pottery decoration. The decoration was apparently made with "a square-pointed stick, which was poked into the clay at an angle," and this decoration was confined to the shoulder of the pot, rather than the rim. There were "two styles, one a single line of punctations, and the other a zigzag." He also noted a tendency to a "slight outward flare at the rim," and he found one complete miniature vessel (restricted simple in shape) with opposing handles, measuring 2 inches in diameter (Tyndale-Biscoe 1960a:241). Tyndale-Biscoe considered that one could speak of a "Port Morant style" (on a par with the Montego Bay style), and that this style "may have been transported direct from Hispaniola." Vanderwal also considered that the site had "ceramic remains unlike those found in all the rest of Jamaica," and for that reason he carried out excavations here in 1968.

Vanderwal dug a relatively large number of units at the site, because the deposits were quite shallow, seldom over 18 inches deep. There were 15 test pits and four trenches of an unspecified size. There were 69 "collections." No description of the pottery was given. "The most interesting find was a series of 10 perforated sharks' teeth, which may have been components of a necklace, or perhaps of a composite weapon."

References: AJ 1966, 6:1; 1967, 2:1; 1967, 8:1–2; Tyndale-Biscoe 1960a, 1960b, 1962; Vanderwal 1968d.

St. Catherine

White Marl (S1)

Duerden (1897) and Cundall (1939) both refer to this site as Caymanas. According to them, it was first brought to notice by Richard Hill in 1860. He referred to "an Indian village . . . at the Marl Hill" where the road descended into the plain of Caymanas. He pointed out that "in past times the Rio Cobre swept

at the foot of this hill,” until it was diverted by a storm in 1722. Apart from pottery and shells, he found also “portions of human skeletons.” Robert Howard (1950:85–87) visited the site in 1947 and 1948 and its potential became obvious to him. He noted that, thanks to the work of local collectors, “a surprisingly large number of complete or nearly complete pots have been recovered which is decidedly unusual for Jamaica, where middens as a rule only rarely yield whole specimens.” The site had in fact already been extensively damaged in 1944, when a road was cut through, isolating (as it still does today) the southern portion of it from the remainder. Howard expressed the opinion that the road cut took out precisely what had been “the area of heaviest occupation” (Howard and Lewis 1961–1962:59). Nonetheless, a great deal remained. Lee mapped the site in 1965, and according to Vanderwal (1968a:84) it may originally have occupied an area of up to 33 acres.

Following Tyndale-Biscoe’s work in 1952–1954, Howard carried out excavations in the portion of the site north of the road in 1958, 1961, 1963, and 1964 (Howard 1961–1962, 1965; Howard and Lewis 1961–1962; Tyndale-Biscoe 1954). He had intended to carry on the work on a larger scale, but this was prevented by his sudden death in 1965 (du Quesnay 1965a). Silverberg and colleagues (1972) subsequently prepared a report on the 1964 excavations. Vanderwal resumed work at the site, and carried out excavations there in 1965, 1966, 1967, and 1968 (Vanderwal 1967, 1968a, 1968d). It was thought that the Public Works Department intended to level the entire southern portion of the site in order to construct a single four-lane highway from Kingston to Spanish Town on the line of the 1944 road cut, hence intensive “salvage operations” took place here in 1967 and 1968 (AJ 1967, 6:1; 1967, 8:1–3; 1968, 4:1). The “blitz attack” in 1967 occasioned a lively correspondence in the *Daily Gleaner* (Jury, October 31, 1967; *Daily Gleaner*, Editorial, November 1, 1967; du Quesnay, November 3, 1967). In fact the threatened widening of the road did not take place, and it was decided that the western-bound highway should follow the line of the old road skirting the southern end of the site, while the 1944 road cut became the eastern-bound highway (which is the position today).

During the operations in the southern portion of the site in 1967, Vanderwal confirmed that White Marl had been occupied during the historic as well as the prehistoric period. In the northern portion, Howard had already noticed some artifacts indicative of English occupation in the top 12 to 15 inches of deposit (Howard and Lewis 1961–1962:61). In the southern portion, Vanderwal unearthed cut stone foundation walls of a structure 35 x 50 ft in dimension, which he believed must have been constructed in about 1745. He sug-

gested that when this portion of the site was leveled prior to the construction of the building a large part of the midden in this area might have been disturbed (Vanderwal 1967). He detected signs of reversed stratigraphy that would support this hypothesis, but there were no such signs north of the road cut. There were no definite signs of Spanish occupation either, although Tyndale-Biscoe believed that one of the anthropomorphic lugs discovered by him depicted a Spaniard, with a straight nose and a beard (Tyndale-Biscoe 1954:Figure 1).

The last excavations so far were conducted by James St. Clair in 1969 in the area north of the road cut, adjacent to the “replica of an Arawak Indian village” that existed then (St. Clair 1970:8).

The entire area of the site originally belonged to the Caymanas Estates. Slightly over 7 acres of the property, north of the road cut, were donated to the Jamaica National Trust Commission by Constance Hamilton (which area is now fenced and owned by the JNHT). Tom Concannon was employed to design and build the Arawak Museum, which was opened officially in 1965, and is under the administration of the Institute of Jamaica (du Quesnay 1965b; AJ 1982, 3:20–21). The museum was closed following Hurricane Gilbert in 1988, and was reopened as the Taíno Museum in 2001.

Further details concerning the results of the excavations are given below.

(1) *Tyndale-Biscoe 1952–1954.* Tyndale-Biscoe “cut a cross-section right through the midden,” 25 ft long and up to 8 ft deep. The trench was still visible in 1961 (Howard and Lewis 1961–1962:61) but it was not recorded on any plan. According to Tyndale-Biscoe (1954:124) the stratigraphy (to a total depth of 5 ft 3 in) was as follows.

- (1) 2 ft: Surface soil with a certain amount of potsherds and other midden material
- (2) 6 in: Pure soft marl
- (3) 2 ft: Pure midden material
- (4) 6 in: Marl with slight traces of midden material
- (5) 3 in: A stratum very prolific of animal, bird, and fish bones and crab claws, embedded in ashes. A few undecorated potsherds.
- (6) Natural earth

Tyndale-Biscoe had no explanation for the marl layers, except that perhaps “the site was abandoned for some time and the marl was washed over it.”

(2) *Howard, 1958, 1961, 1963, 1964.* In his first three seasons, Howard excavated three middens to a depth of about 5 ft, and also a larger area between

Table 16. Radiocarbon Dates for Middens 2 and 3 at White Marl.

Y-1119	midden 3	40–50'' below surface	617 ± 95 B.P.
Y-1117	midden 3	50–60'' below surface	1016 ± 95 B.P.
Y-1118	midden 2	40–50'' below surface	1073 ± 95 B.P.

them in an endeavor to find postholes that might be indicative of house structures. In this he did not succeed. The excavation proceeded by way of 10-in arbitrary levels. He reported that in each of the three middens, a single burial was discovered at the bottom of the deposits. The first skeleton found was that of a young man in his mid- or late twenties, who had been buried in a seated flexed position. The other two skeletons, also flexed, were interred lying on the left side (Howard 1961–1962:63–64). “Each burial appeared to have been placed on the original ground surface and the refuse then deposited on it over a period of time” (Howard 1965:251). None of the burials were intrusive. Radiocarbon dates for middens 2 and 3 (Table 16) were reported by Silverberg and colleagues (1972).

As Silverberg and colleagues pointed out, the two oldest dates for middens 2 and 3 are quite early (the oldest obtained for the site) and they suggested “a first occupation at about AD 900.” “One midden 3 date (Y-1119) is at the late end of the sequence, but it is so recent compared to the other midden 3 date (Y-1117) as to suggest contamination of the sample” (Silverberg et al. 1972:41). Excluding Y-1119, the calibrated date range for Y-1117 and Y-1118 comes to ca. A.D. 860–1130.

During these excavations, Howard confirmed Tyndale-Biscoe’s observations in regard to the marl layers. He suggested that “deliberate marling” may have been carried out periodically in order to “sweeten” or “freshen” the site, alternatively it could have reflected “ceremonial or cyclical renewal practices,” or (rather as Tyndale-Biscoe had suggested) “the preparation of a fresh occupation surface after temporary desertion of the site” (Howard 1961–1962:63). No evidence was obtained to support the view that they might have been house floors (Silverberg et al. 1972:43).

In 1964 Howard excavated two trenches in two middens, A (to the north) and B (to the south), as shown in a “schematic representation” reproduced by Silverberg and colleagues (Appendix 30).

Excavation was carried out in 5 x 5 ft squares, and proceeded by way of 6-in arbitrary levels, according to a uniform grid. The larger excavated area shown between the two mounds seems to correspond to the one investigated by him

Table 17. Radiocarbon Dates for Trench A at White Marl.

Y-1750	6' N	level I	460 \pm 120 B.P.
Y-1751	6' N	level V	760 \pm 60 B.P.
Y-1753	6' M	level II	650 \pm 60 B.P.
Y-1754	6' M	level VII	720 \pm 60 B.P.

Table 18. Radiocarbon Dates for Trench B at White Marl.

Y-1785	13 F	level IV	650 \pm 60 B.P.
Y-1784	13 F	level IX	780 \pm 60 B.P.
Y-1755	13 F	Burial 2	600 \pm 60 B.P.
Y-1786	12G	Burial 3	800 \pm 80 B.P.

in earlier years. The stratified deposits in the middens were more than 7 ft deep. Three burials were discovered in trench B. (1) A 2- to 4-year-old child burial flexed at a depth of 58 inches in square 12 F. (2) An adult burial, also flexed, at a depth of 59 inches in squares 13 F–G. Probably male, without grave goods. (3) An adult burial, again flexed, at the same depth in square 13 G. Either a young woman or an adolescent. “A plain round vessel was placed with the body.” “The profile on the trench wall of the excavation in which burial 3 was found shows that the body was interred in a very shallow pit, about 9–10” deep, which was covered with midden refuse.”

Eight radiocarbon dates for trenches A (Table 17) and B (Table 18) were reported by Silverberg and colleagues (1972).

As Silverberg and colleagues pointed out, the dates for the two squares 6' N and 6' M in this trench are quite consistent, “giving a time span from about AD 1200 [probably earlier, for the deepest deposit is not dated] to the time of contact or perhaps slightly before it.” The calibrated date range for trench A is ca. A.D. 1240–1525.

The dates for stratigraphic levels IV and IX (where level XII was the deepest) are again consistent, and not out of line with those for trench A. However, as Silverberg and colleagues pointed out, the dates for the two burials do not agree with each other, “although the pit bottoms of each are at the same depth, level IX.” Burial 3 is at about the time expected for this level, but “Burial 2 seems much too recent” (Silverberg et al. 1972:41). If Y-1755 is again excluded, the calibrated date range for trench B is ca. A.D. 1160–1390.

(3) *Vanderwal, 1965–1968.* The information about these excavations is

sparse. In 1965 a controlled molluscan sample was obtained for comparison with Howard's vertebrate sample from 1964, and from the account given by Silverberg and colleagues (1972:36–37) it seems that two 5 x 5 ft units were dug, presumably at some point on Howard's grid. "Five successive occupational strata" were identified, four separated from one another by "thin bands of culturally sterile reddish-brown soil," whereas the fifth was distinguished on the basis of different ash color only. The ceramics excavated by Vanderwal in 1965 and 1966 formed "the primary control" for his seriation of south coast sites. His diagram showed the material both from a trench (White Marl IV, with 11 levels) and a test pit (White Marl VI, with 4 to 5 levels) (Vanderwal 1968a:87, 120, 123, Figure 6). It is interesting to compare these results with those Vanderwal obtained from his study of 1,325 potsherds excavated by Howard in 1964 in his trenches A and B levels 0–IX (Silverberg et al. 1972:13–17, Figure 5). In the diagram for 1964, as Vanderwal put it, "the class of filleted rims increased at the expense of, and gradually replaced, the class of plain rims." Filleted rims were, however, present to some degree in the lowest level. This was not the case in Vanderwal's own trenches, where filleted rims are not present at all in the lower half of the sequence.

In 1967, during his operations in the southern portion of the site, Vanderwal uncovered a burial of "a woman who had cradled in her arms a child aged between 1 and 3 years" (Vanderwal 1967). He also found a complete (but broken) circular vessel with another smaller one inside; it was suspected (although it was not confirmed) that it also contained the bones of an infant. In all, according to Vanderwal, "24 excavations 5' x 5' were made, yielding a total of 173 discrete collections and approximately 5,000 decorated potsherds" (Vanderwal 1967).

In 1968, for the most part, attention was shifted to the northern portion of the site, where Howard's excavations had taken place. The work was done "expressly to obtain more information on burial patterns, and new display material, in as much as previously excavated burials were in a poor state of preservation" (Vanderwal 1968d). The burials were discovered in two areas.

(1) In Howard's mound B, immediately west of his excavated trench, in squares 12 J and K and 14 J. In 12 J and K a single flexed burial was found, with no grave goods. In 14 J three burials were encountered, at different stratigraphic depths. The lowest was undisturbed, but the uppermost had intruded upon the middle one. Vanderwal described the latter as fully flexed, with a large boat-shaped vessel placed over the skull and a small circular bowl by the feet. By the head was the body of a dog.

(2) Another midden named mound C was excavated west of A and B, by means of a north-south trench 35 ft long and a second trench oriented perpendicular to it. Three “simple flexed burials” were found in this area. Vanderwal concluded that there had obviously been a great number of burials at White Marl, and certainly “future excavation at the site” would reveal more.

The unpublished papers at the Institute of Jamaica include a “North Face Profile” of square 13 I (Appendix 31). This is schematic but shows better than words can the alternation of deposits at the site, to a depth of 7 ft. One of the squares in Howard’s mound B is 13 I, but comparing the slope of the deposits with his contour map one would rather have expected this to be the south face. It is not sure, but presumably the profile originated with Vanderwal.

(4) *James St. Clair, 1969*. According to St. Clair’s unpublished proposal (1969) he intended to extend Vanderwal’s second (east-west) trench westward. In the event, according to the published report (1970), “the total area excavated to a depth of 5’ was a 120 square foot block.” “Nine post holes were revealed indicating a circular structure with a diameter of approximately 14’. In the centre of this structure, where one would presume a centre post would be, was a 12” circular burned area.” The entrance faced east, and what was defined as a “cooking area” was located to the west. Here there was a “large burned area of soil” and numerous griddles. No further burials were recorded, hence the minimum number of burials revealed at the site in the period 1958–1969 was 15, with 16 individuals represented, of whom three were children.

(5) *Fauna*. E. S. Wing studied the faunal remains from Howard’s 1964 excavations. They were treated as a whole and not separated by successive excavation levels. Twenty-eight species were identified with a minimum number of individuals (MNI) of 713, which were then compared with other sites in a summary fashion, in groups reflecting the environments these species preferred (Appendix 10, reproduced here at Table 23).

Terrestrial remains were clearly predominant with 62 percent (441) of the total. *Hutia* alone accounted for 50 percent (357); other species included rice rats, five dogs (*Canis familiaris*), iguanas, and unidentified birds. Twenty sea turtles (the remains of which were too fragmentary for specific identification), or 3 percent of the total, were evidently caught on the beaches. Inshore species represented 25 percent (177) of the total, and clearly this was also a favored exploitation habitat. The remains of one manatee (*Trichechus*), five alligators (*Crocodilus acutus*), and 34 cartilaginous fish (Chondrichthyes) were found. Apart from one eagle ray (*Aetobatis*) the latter included at least 20 tiger sharks (*Galeocerdo cuvier*). As Wing comments, these sharks may come in very close to

the shore, and they are dangerous. Inshore species of bony fish (Osteichthyes) include snook (*Centropomus*), porgies and breams (Sparidae), jack (*Caranx*), mullet (*Mugil*), and tarpon (*Megalops atlanticus*). Wing comments that the last two must have been caught with seine nets, which implies the use of net sinkers. Harpoons may have been used to catch the manatee and the alligator. Bank and reef fish account for 10 percent (74) of the total, among them in particular snappers (*Lutjanus*) and groupers (Serranidae). There is only one tuna (*Thunnus*) representing offshore (pelagic) fish. There were “abundant” crabs in the sample but since they could not be more closely identified they were not included in the tabulated figures. In sum, as Wing puts it, subsistence at White Marl was mainly based on land mammals, and the marine resources exploited were primarily estuarine.

The study of the molluscan remains presented by Silverberg and colleagues (1972) relates to Vanderwal’s sample from 1965 and not to Howard’s from 1964. Over 100,000 shells were collected representing more than 80 species, but the details given in the report are sparse. Forty-two of the species are said to represent an open shoreline environment, in particular *Melongena melongena* and *Arca* spp. Other environments represented include rocky shorelines, mangroves, and lagoons, with only two riverine species. Land snails, particularly Pleurodonta, were also abundant. “In the lowest two levels of excavation, a non-edible snail, *Sagda* sp., occurs to the virtual exclusion of edible species of mollusca, suggesting a long-standing pristine environment.” In succeeding levels, their numbers drastically decreased, “probably due to cultural destruction of their habitat.”

References: AJ 1965, 9:1; 1966, 1:1–2; 1967, 3:2; 1967, 6:1; 1967, 8:1–3; 1968, 4:1; 1973, 4:2; 1981, 2:1–4; 1982, 3:20–21; Cundall 1939:16, 20; *Daily Gleaner* 1967; du Quesnay 1965a, 1965b, 1967; Duerden 1897:14–15; Howard 1950, 1956, 1961–1962, 1965; Howard and Lewis 1961–1962; Jury 1967; Silverberg et al. 1972; St. Clair 1969, 1970; Tyndale-Biscoe 1954; Vanderwal 1967, 1968a, 1968d.

Rodney’s House (S5)

First reported by Tyndale-Biscoe (1954) who carried out some digging here. He mentioned finding a pendant of limestone, about 1 3/4 in long, somewhat barrel shaped, with a transverse hole bored through it near the top and a decorative line cut around the top. Described as a “moderately sized village” and mapped by Lee in 1967. Excavated by J. C. Wilman in February–July 1978,

and by C. Medhurst in April 1979, the fauna from both excavations being analyzed by Sylvia Scudder.

Medhurst and Wilman variously estimated the area of the site at 1 to 2.6 acres, and they identified six separate middens at the locality (Appendix 24). Wilman excavated two 5 x 5 ft squares (J1 and K2) in midden 2 in 1978, both taken to a depth of 1.4 m. In 1979 Medhurst excavated a third square here (K3) taken to a depth of 1.2 m, and a fourth square (S17) in midden 3 to the northeast, where the maximum depth was 40 cm. Wilman recorded a large quantity of ash, but no evidence of sterile soil or marl layers (such as characterize White Marl [S1]).

Wilman's excavations produced 370 sherds judged suitable for analysis and Medhurst's produced 141. Both excavators remarked that filleted rim sherds were confined to the top 60 cm of deposit ($n = 23$ from the two excavations), and they took this as an indication that Rodney's House must predate both White Marl (S1) and Bellevue (K13). Wilman attributed 14 sherds to water bottles, and in the entire excavation 101 griddle fragments were recovered. The whole excavation also produced 56 chert flakes and/or cores, and a number of other lithic pieces, including some rather uncertainly defined ground stone artifacts, a pendant, and a disk (Wilman 1978:Appendix G, Figures 1 and 8). Wilman recovered 165 pieces of broken staghorn coral (*Acropora prolifera*) many with signs of wear, and he suggested that these had been fitted into wooden frames to make scrapers for cassava preparation. A substantial area of flat land, which would have been suitable for cultivating this crop, was found to the west of the site.

From squares J1 and K2 Wilman recorded a total of 3,394 marine and 371 terrestrial mollusks ($n = 3,765$). Later, Medhurst collected a "representative sample" ($n = 604$) from square S17 only, which, as he said, showed little divergence from the previous set. According to Wilman (1978:Appendix C) there were 46 marine and six or seven terrestrial species. Scudder's total for squares J1 and K2 is somewhat higher ($n = 4,110$) and she adds four more marine species/classes (pearl oyster: *Pteria*, eastern oyster: *Crassostrea*, barnacles: *Cirripedia*, chitons: Polyplacophora), but all accounts agree on what were the dominant components. These were *Arca zebra* and *imbricata*, *Donax denticulata*, *Chama macerophylla*, and *Ostrea frons*. As Scudder comments, these are all shallow water bivalves.

The vertebrate and crab fauna analyzed by Scudder is summarized at Table 25. From all units combined she counted a total of 6,728 bone and crab fragments

with an MNI of 747. The figures for MNI have been taken or calculated from her report, and the percentages of the classes represented have been recalculated (in view of some apparent discrepancies in individual percentages as printed in her report). Clearly, fish are dominant, closely followed by crabs. As Scudder comments, the most abundant fish taxa are “representatives of families which utilize both reef and open-bottom areas in shallow near-shore environments.” Individual bird frequencies are not specified, but they included egrets, herons, doves, pigeons, seagulls, and clapper rails. As Scudder remarks, when the frequencies are broken down level by level, some interesting shifts in faunal exploitation through time emerge (Scudder 1992:Figure 2). In general, there is a tendency for fish to increase and for crabs to decrease, and the mollusks closely track the fish values.

Scudder concludes that “the overall faunal assemblage depicts a localised exploitation of typical West Indian dry-coastal and shallow-water animal communities.” It indicates a “restricted catchment area,” with an absence of distant montane and pelagic species. In comparison with both White Marl (S1) and Bellevue (K13) one can detect “a clear continuum of coastal to inland localised adaptation.” The three sites are shown on Scudder’s map, which also has the merit of indicating the different types of shoreline on the island (Appendix 43).

While this general conclusion is convincing, there are some difficulties in using Scudder’s figures as published for comparative purposes. There are two reasons for this. First, MNI and percent figures are not given for all the species represented at Rodney’s House, as is clear from Table 25. Second, her figures include crabs and lobsters, of which there are 17 specimens, or 23 percent, of the total MNI at the site (Scudder 1992:38). At White Marl (S1) and at Bellevue (K13), unfortunately, no information of this kind is available, even though crabs were certainly present (Silverberg et al. 1972:Table 2, note*). The breakdown of species represented at Rodney’s House according to “resource use areas” and in terms of percent of total MNI is as follows (Scudder 1992:Figure 3). Figures for actual MNI have been calculated on the assumption that total MNI = 747, see Table 19.

Clearly, the terrestrial element includes the majority of the mammals (excepting manatee) and the birds (as at White Marl) as well as iguana. Scudder indicates that the two land crabs *Cardisoma* and *Gecarcinus* are also included, although (if so) this would seem to produce too big a total. The beach element clearly includes sea turtles, although elsewhere it is said that no pelagic species are present. Inshore elements include manatees and crocodiles, and also certain

Table 19. Fauna from Rodney's House in Terms of Resource Use Areas.

	%	MNI
Terrestrial	35	262
Inshore	26	194
Banks and Reefs	26	194
Other: pelagic, beach	13	97
Total		747

named fish species: mojarras, porgies, snook, and jack. Bank and reef species include: snappers, grunts, groupers, and triggerfish; but in neither case do we have a full quantified list of the components making up these classes.

As part of her report, Scudder mentions the finding of human remains, but no further details are available.

References: Aarons 1983a:78; AJ 1967, 3:2; 1967, 4:2; 1975, 2:6; Medhurst (1980) The Rodney's House Site (S-5) St. Catherine, AJ 1980, 4:1–16; Scudder 1992; Tyndale-Biscoe 1954; Wilman (1978) Rodney's House (S-5) St. Catherine, AJ 1978, 3:1–10, 12–24; Wilman (1979) Rodney's House, A Postscript, AJ 1979, 4:1–2.

Mountain River Cave (SC1)

Originally described by Duerden (1897), who was particularly interested in the petroglyphs, which he described as carvings produced by deep incisions. "The face [of the principal figure] is surrounded by two parallel three-sided incisions, producing somewhat the appearance of a thick hood. The outer incision is continued below, giving to the whole the resemblance of a shrouded human body" (Appendix 18). "A fallen piece of rock, measuring about 4 feet cube, lies upon the ground nearby, and bears similar carvings, but the figures are not so complete" (Appendix 19). The cave apparently remained unknown, except to the locals, from 1914 to 1954, when it was rediscovered by Lee, who was taken to it by the owner of the land, Robert Cooper. His son, Enos Cooper, sold the 2 acres immediately surrounding the cave to the Archaeological Society of Jamaica in 1976, financial assistance for the purchase being provided by Alpart, the Bank of Nova Scotia, and W. J. Bryant. A protective wall and grill was erected around the cave with the assistance of the Jamaica Defence Force (JDF) in 1980, and the property was officially handed over to the Jamaica National Trust Commission (now the JNHT) on May 19, 1982.

As Lee says, the cave is more correctly described as a rockshelter, measuring according to him 25 by 12 ft in plan, with a ceiling 6 to 9 ft high. The designs executed in black on the ceiling make this “easily the best pictograph site in Jamaica.” Watson (1988) was able to identify 148 pictographs altogether, of which 61 were zoomorphic, 84 were anthropomorphic, and three were abstract. Recognizable figures include birds, tree frogs, turtles, and reptiles variously identified as lizards, crocodiles, or iguanas. One scene shows two men in bird masks facing each other and holding spears or throwing sticks. Lee considered that this represented a hunting scene for aquatic birds, but in Aarons’s view (1988) it had a wider religious or ceremonial significance. As he pointed out, the most outstanding Jamaican example of a human bird headed motif is one of the three wooden figures found at Spots in Carpenter’s Mountain in 1792 (Bercht et al. 1997:Figure 1; Kerchache 1994:128–129).

According to Lee, there were Arawak pottery fragments “in the cave floor,” and the site had also “produced some potsherds during excavations by Vanderwal near the cave mouth.” In addition, Aarons (1988) mentioned that, when he visited the site, he found “sherds of Arawak pottery” along the pathway leading to it; there was also a small collection of Arawak sherds from the Mountain River Cave area at the White Marl Museum “up to late 1984.” Presumably these may have come from Vanderwal’s excavations. Vanderwal published no account.

References: Aarons 1988; AJ 1965, 9:1; 1967, 3:2; 1970, 4:2–4; 1974, 4:1–6; 1976, 2:5; 1976, 3:1; 1977, 2:1, 4; 1979, 2:6, 7; 1979, 4:1, 3; 1980, 2:12, 13; 1981, 2:1, 8; 1981, 4:6; 1982, 2:1–16; Bercht et al. 1997; Duerden 1897:49–50 and Plate 7:Figures 1 and 2; Kerchache 1994; Watson 1988.

White Marl Cave #1 (SC5)

According to St. Clair’s account (1970) this cave, 500 yards northeast of the White Marl Museum, was discovered in December 1968 by squatters, at which time the Institute of Jamaica sealed it until the excavations conducted by St. Clair in 1969. (This is at variance with Lee’s account, according to which he first mapped the cave in December 1967.)

St. Clair (1970) provided illustrations both of the general situation of the cave in relation to the White Marl Museum, and the interior of the cave (the latter drawing being purely schematic according to the illustrator; Audrey Wiles, personal communication). The size of the cave was 40 x 28 ft with a roof no more than 4 ft high. The cave produced four complete skulls, eight partial skulls, and three complete mandibles, along with approximately 800

other human bones. Eleven of these individuals were adult males, but the 12th skull belonged to an infant about 2 years old. Unlike the other skulls, it had no signs of cranial deformation. It was placed in a different location, by itself, with three small broken potsherds. There were five complete pots in the cave, four associated with one individual skeleton each, and one apparently “shared” by the remaining seven individuals. According to St. Clair, this showed that a “ranking” system was in operation. After the excavations, the burial goods and skeletal remains were displayed at the White Marl Museum, but their present whereabouts is unknown.

References: AJ 1967, 12:1; 1981, 2:1, 3; St. Clair 1970:7–10.

Trelawny

Stewart Castle (T4)

First described by Duerden (1897), who noted that six distinct mounds were situated on a slight rise at this place, one of the mounds being larger than the rest. Excavations were carried out (presumably by Duerden rather than the landowner Dr. Dewar), hence Howard’s statement (1950), that this was one of “the very few aboriginal sites in Jamaica at which any definite indications of stratigraphy have been reported.” The mounds, according to Duerden, covered an area of about 7 acres, but in the depressions between them only stray shells were encountered. “The extent of the area covered, and the thickness and quantity of the various deposits prove that the locality must have been frequented for long and various periods by numbers of the aboriginal Indians.” C. A. Matley again excavated the central mound in 1922 (Sherlock 1939). Mapped by Lee before 1968, reported to be undisturbed in 1973.

Duerden carried out some excavations at all the mounds, but his description mainly relates to the central one. “In the principal mound digging was continued to a depth of 6 feet; remains being met with for 5 feet.” In the other mounds the depth of deposit varied between 4 and 2 ft. The upper soil was dark, with light-colored marly material beneath. Bedrock was not reached in any case. Distinct layering was visible in the central mound, “fine greyish-blue ashes” alternating with “burnt earth and soil,” few shells being found in the latter. Matley confirmed the existence of at least two layers of ash in this mound. He also reported two layers of flattish stones, which he took to be constructional material.

Duerden mentioned the presence of numerous fish bones, as well as a few of *butia*. The terrestrial snail *Helix acuta* was most common, followed by the ma-

rine species *Lucina tigerina* and *Mytilus exustus*. There were some crab claws, and two pieces of madreporine coral. Apart from pottery and chert, Duerden also recorded two implements made from the shells of *Strombus gigas*. As Howard remarks, “these were the first shell artifacts to be described from Jamaica.”

A new map of the site, using digital technology, was produced in 2004, by a team under the direction of P. Allsworth-Jones and M. Kappers. The results were reported to the 21st Congress of the International Association for Caribbean Archaeology, meeting in Trinidad in 2005.

References: AJ 1968, 3:1; 1973, 3:1; Duerden 1897:18–19; Howard 1950: 62–63; Sherlock 1939:3.

St. Mary

Rio Nuevo (Y4)

Site discovered by J. M. Cruxent in 1964, when he was investigating the area of the historic battle on the western side of the river, the “last Cromwellian victory” of June 1658 (Robertson 2002). The main Pre-Columbian site is on the eastern side of the river. Mapped by Lee in 1965, the line of the new road that cut through the site being added in 1972. Lee stated that Cruxent had obtained a radiocarbon date on charcoal of about 700 years B.P. for the site, but this date has never been properly reported. R. L. Vanderwal carried out excavations in 1967. According to him the site as a whole covered 3 1/2 acres. “The high frequency of ceramic decorative patterns which are not commonly found elsewhere on the island make Rio Nuevo one of the most interesting sites in Jamaica.” Vanderwal claimed that similar patterns were found on some Haitian ceramics, “and if one were to postulate contact between Jamaica and Haiti this section of the island would be the most logical point of entry.” In his view, the existence of net sinkers and large numbers of chert flakes also pointed to contact with Haiti. Lee commented on the abundance of the latter in all those north coast sites that were “closest to the supply of flint from the Montpelier limestone,” including (apart from Rio Nuevo) Hartfield (J1), Fairfield (J3), Cranbrook (A20), Windsor (A19), and Coleraine (Y19). Sixty-six net sinkers were recovered by Lee from Rio Nuevo, by far the most from any Jamaican site known to him (AJ 1978, 1:Tables I–III). On the basis of 86 net sinkers from 9 sites, Lee concluded that their average measurements were 6.5 x 5.0 x 1.5 cm and that their average weight was 108.7 g. Of the 66 specimens from Rio Nuevo, 23 were of igneous or metamorphic rocks, 11 were of sandstone,

and 32 of limestone. The stones used came from the nearby river. On a visit in 1977, Lee found an artifact of a different type: a white quartz pendant or bead (4.0 x 1.7 cm in size) “tapered symmetrically to both ends like a slender barrel, but not pierced” (AJ 1977, 2:Figure 1.6).

In 1967, during a three-week period, Vanderwal excavated four 5 x 6 ft test pits and one trench 30 x 5 ft in size. Site depth was reported to be about 3 ft. In his unpublished report (1968d) he stated that “the number of decorated potsherds has not yet been determined.” “Enormous quantities” of net sinkers were recovered, as well as shells, and animal and fish bones.

Two infant burials were discovered. (1) was placed in a ceramic “coffin” consisting of a smaller bowl inverted over a larger one. According to Vanderwal, no soil was in contact with the bones; hence, the degree of preservation was the best he had encountered in Jamaica. (2) had a small three-sided bowl placed with it, which Vanderwal considered to be unique in Jamaica, “although it is fairly common in Haiti.”

E. S. Wing analyzed the vertebrate fauna (Appendix 10, reproduced here at Table 23). There were 29 species represented with an MNI (minimum number of individuals) of 600. Wing calculated that only 21 percent (126) of the fauna was terrestrial (almost all *hutia*) the remaining 79 percent (474) consisting of marine species. Among them 3 percent (15) are sea turtle (Cheloniidae), which evidently were captured on the beach. The remainder is divided into three categories: inshore 16 percent (97), banks and reefs 52 percent (312), and offshore 8 percent (50). Prominent among the inshore species are jack (*Caranx*) and grunt (*Haemulon*). Wing makes the point that some of the others, especially porgy and bream (Sparidae), mullet (*Mugil*), and tarpon (*Megalops*), could only have been caught using seine nets. The stone net sinkers recovered in large quantities at the site, together with wooden floats that have not survived, were evidently used in the making of such nets. Bank and reef fish constitute the majority, notably groupers (Serranidae), particularly the Nassau grouper (*Epinephelus striatus*), snappers (*Lutjanus*), squirrelfish (*Holocentrus*), wrasse (Labridae), parrot fish (Scaridae), and surgeonfish (*Acanthurus*). Their abundance, as Wing suggests, reflects the fact that the Rio Nuevo flows into a very deep bay and that there are coral reefs at its mouth. Fishing on the reefs required the use of hooks and lines, and traps, as well as seine nets. The presence of black durgon (*Melichthys niger*) indicates that “the people had the ability and willingness to fish under conditions of greater risk,” since this species is typically found along the outer side of reefs. Deepwater fishing is also indicated by the

presence of the offshore (pelagic) family Scombridae, particularly tuna (*Thunnus*). Apart from fish, there were a number of crab remains at the site, but Wing gives no numbers for them.

Most recently, Jo Stokes (2002) has reinvestigated the site. This is particularly important because the whole area is being affected by development, following the sale of the majority of the land by the Beckford family. Stokes reports that “the crest of the hill” still “contains deep cultural deposits of ceramics, bone, and shell measuring almost two meters deep at some points.” The stratigraphy revealed two layers of marl deposition, the only site in the island where this phenomenon has been observed, apart from White Marl itself. Interesting items recovered included a crocodile tooth pendant. In addition, a number of other “light scatters of artefacts” were discovered in the vicinity. Stokes concludes that “the picture of the social landscape during Pre-Columbian times is one of long-term intensive settlement of the Rio Nuevo site, with smaller more ephemeral outlying sites stretched along the coast and up the river inland.”

References: AJ 1965, 6:1; 1965, 9:1; 1967, 8:2; 1972, 2:2; 1973, 3:2; 1977, 1:7; 1977, 2:3; 1978, 1:1–5; 1982, 1:6; Robertson 2002; Silverberg et al. 1972; Stokes 2002; Vanderwal 1968a, 1968d.

Wentworth (Y8)

Not mentioned by Howard (1950), so presumably not known to early twentieth-century investigators, but mapped by Lee in 1966. He described the site as a “typical hill-top village not much more than half a mile from the sea but at an elevation of 500 feet overlooking Port Maria bay.” Noël Coward’s house, Firefly, built in 1949, and the older structure described by him as Look Out (Payn and Morley 1982), occupied the “main flat area of the site.” The midden accumulations were “scattered about in the gardens and on the steep slopes running off from the hill-top.” Some time later an “amphitheatre,” consisting of long cutaway steps dug into the slope facing the sea, was constructed, and in the course of this work a considerable quantity of archaeological material was found (Lynda Lee Burks, “Island Outpost,” personal communication). In 1977 Errol Henry purchased the area of land immediately adjoining the Firefly estate on the northeast. He noticed the presence of Pre-Columbian remains on his land and created the “Zabai Tabai” Museum in order to display them. Excavations on Henry’s land were conducted by Basil Reid on behalf of the JNHT in 1988 (Reid n.d. and 1990).

Reid’s excavations took place during the period December 9–20, 1988. Ac-

according to him, a tractor had already destroyed some of the deposits, hence he regarded his work as a “rescue project.” A “severely disturbed human burial in a crouched position” had also been located in 1986, “on the upper slope of Mr. Henry’s property to the south-east.” Four trenches were excavated; each said to be 4 x 2 m in size. Trenches I and IV were both located near the fence of the Firefly property on the summit of the hill, whereas trenches II and III were dug “on the lower slopes.” All were taken down to bedrock. Trench II contained no artifacts, and trench III produced only a few, hence Reid’s report relates essentially to trenches I and IV only. In this area bedrock was said to be at a depth of 25 to 30 cm. Large quantities of shells and faunal remains (especially fish) were found but were not described in detail. Lithic artifacts mentioned include flakes, tools, and cores of chert, sandstone, and granite, as well as some petaloid celts. Three “postholes” were located at a depth of 10 to 12 cm, but it was not stated in which trench these were found.

Reid divided the ceramics into two groups. “First, about 60% of the ceramics are thick and coarse-grained with a reddish-brown to brown colour.” “The remaining 40% were thin, fine-grained, and many of them had a noticeable red slip.” The two groups were said to correspond to White Marl and Redware occupations respectively, the latter being expected to “clearly predate” the former, although no claim was advanced that a stratigraphic distinction had been made between them. Reid observed that “to have discovered two different Arawak cultural strains on one site is indeed rare in Jamaica and therefore the Wentworth site has special archaeological significance.” He recommended that “follow-up excavations” should be conducted to confirm or disprove this assertion.

A further small excavation was carried out by the UWI–Murray State University team in March 2002, with Henry’s permission, in order to verify these results. The work was confined to the eastern part of Reid’s trench IV, where a section was dug to a maximum depth of 60 cm. Three stratigraphic layers were identified, a medium brown topsoil, a gray-brown “midden” deposit, and a basal red layer immediately above bedrock, in places only. The soil stratigraphy, however, did not correspond to any cultural differentiation. In the excavated area as a whole, about 1,800 potsherd fragments and 300 pieces of chert were recovered, as well as a few other pieces such as coral and ground stone and one stone bead. So far as the pottery is concerned, incised decoration and filleted rims occurred from top to bottom. Sherds of this type were found at the very base of the sequence. This fact, and the complete absence of any sign of pottery with red slip, in an area immediately adjacent to that dug by him, is not

in accordance with Reid's claim that both Redware and White Marl type ceramics occurred together at the site. The occupation is exclusively White Marl in character.

A radiocarbon date on charcoal found near the base of the section, in layer 3, was obtained as follows: Beta-167740 680 ± 60 B.P. (A.D. 1270 ± 60). This date is consonant with those for other White Marl occurrences on the island, the calibrated date range being ca. A.D. 1280–1390.

Lisabeth Carlson (2003a) has analyzed the fauna from the 2002 excavations. A total of 4,152 bones produced a minimum number of individuals (MNI) of 123. Twenty-five different species were identified, excluding invertebrates. Most numerous were fish, with 95 individuals, of which the most common were groupers (Serranidae) and parrot fishes (Scaridae). The second most important resource was provided by *hutia*, with an MNI of 17. It should be noted that two bones of iguana (*Cyclura collei*) were recovered in level 1. This lends weight to Johnson's observations at Cinnamon Hill (J10) despite the reservations expressed by C. B. Lewis at the time. Carlson comments that the "density of bone is very high and the preservation of the pieces of bone is excellent," so additional work at the site could not fail to provide good evidence.

It should be noted that this site, which has a very commanding position, may correspond to one mentioned by Columbus. When he was stranded on the north coast of Jamaica in 1503 (presumably at St. Ann's Bay) Diego Mendez was dispatched to obtain supplies, which he did in two nearby villages. From there, he records, "I went on to visit a great cacique, whose name was Huareo, at a place now called Melilla, which was thirteen leagues from the ships" (Cohen 1969:311). Melilla is generally assumed to be the equivalent of Port Maria, which is below the site, hence this may have been the headquarters of Huareo.

References: AJ 1966, 6:1; 1967, 1:1; Carlson 2003a; Cohen 1969; Howard 1950; Reid n.d., 1990; Payn and Morley 1982.

Coleraine (Y19)

Located and mapped in detail by Lee in 1970. "This village site is of special significance not only because of its size but also because we believe it to be one of the few Arawak sites actually named in historical documents. It occupies the summit and easterly flanks of a low hill near the mouth of the Wagwater river. Over 30 distinct house locations can be counted, all with their marginal midden accumulations, and many other patches of midden material, within an area of five acres. It was, without any doubt, a village of major importance." Lee re-

visited the site in 1984 when it was being cleared to plant coconuts. “Luckily, very little damage was done to the midden deposits, and coconut trees on 25 foot spacing will cause minimal long term damage to the site.” One net sinker of hard gray sandstone was illustrated.

Relying upon an account given by Fernandez de Oviedo, Padrón (1952:42) referred to “el Puerto de Guayguata,” which was west of “el Puerto de Anton.” He also listed the “Rio Agua Alta” and equated it with the Wagwater River (Padrón 1952:Map, *Hatos y Ríos*). Yates and Thompson (1959–1960) commented that the name Wagwater is a corruption of Guayguata, “a name which the Arawaks gave to the present Annotto Bay.” Randel (1960) accepted the derivation of Wagwater from Agua Alta, but Cassidy (1988) followed that given by Yates and Thompson, commenting that “Guai- is a common first element in many Indian tribal names of the Caribbean and South America.” It seems therefore that (while there may be two opinions about the authenticity of Agua Alta) the name Guayguata is closely associated with Annotto Bay. Lee took up this idea when he identified the site of Coleraine with Guayguata. It is possible, however, that the name refers to a district rather than a specific site. This clearly was Father Osborne’s view, since in relation to Iter Boreale (Y14) he remarked that it formed part of an “extensive Indian complex which once ringed the whole of Annotto Bay and was named Guayguata” (Osborne 1973).

Using Lee’s map as a guideline, the site was excavated by the joint UWI–Murray State University team in 2003. Five trenches were dug in two areas (A and B) but only two proved to be really productive. These were adjacent trenches 6–8S 7–8W and 4.5–6S 6–7W, taken to a maximum depth of 50 cm, containing abundant midden material throughout. There were several unusual objects near the base, including a ground stone chisel, a large conch shell hook, and a conch shell celt. Unfortunately, there were signs of agricultural disturbance at the site, and these were reflected in three recent radiocarbon dates. The only radiocarbon date indicative of the prehistoric occupation came from the base of trench 4.5–6S 6–7W as follows: Beta-182412 790 ± 70 B.P., equivalent to a calibrated period in the range ca. A.D. 1190–1280. This is not out of line with the other sites in the area. The existence of some agricultural disturbance is also suggested by the recovery of two pig bones from one of the other trenches.

Lisabeth Carlson (2004) analyzed the fauna. As noticed during the excavation, human remains were present, and Carlson precisely catalogued these. One hundred eighty-eight fragments all came from the two major trenches, the majority being concentrated at 5–6S 6–7W. There was a minimum of two indi-

viduals, one adult and one juvenile. In addition, three shark vertebra beads were found in the vicinity. No other remains of shark were found, and in Carlson's opinion these beads were not manufactured at the site. They very likely accompanied the human remains.

A total of 4,202 bones make up the analyzed assemblage, representing a minimum number of individuals (MNI) of 154. Excluding the pig, the vertebrate fauna consists of the following species: 24 fishes and sharks, two mammals, four birds, and two reptiles. Most numerous in terms of MNI were fish, with 103 individuals, followed by *hutia* with 34 individuals. The most common fish were freshwater sleepers (Eliotridae) followed by groupers (Serranidae). As Carlson points out, this is not surprising, granted the site's immediate proximity both to numerous rivers and to Annotto Bay. She states that 72 percent of the usable meat weight in the diet was provided by marine species and 25 percent by *hutia*. It should be noted that the reptiles included two individuals attributed to the Jamaican giant galliwasp (*Celestus occiduus*) and there was at least one parrot, either black or yellow billed (*Amazona agilis/collaria*). Both species are endemic, and, as Carlson remarks, they would presumably have been captured for their feathers.

References: AJ 1970, 1:1, 2; 1972, 2:2; 1978, 1:3 and Figure 1; 1982, 1:6; 1982, 4:6, 7, 9; 1984, 4:40; Carlson 2004; Cassidy 1988; Osborne 1973; Padrón 1952; Randel 1960; Yates and Thompson 1959–1960.

Green Castle (Y25)

Reported by Miss Jean Crum-Ewing in 1978 and mapped by Lee in that year. Also known as Davey Hill #1. Lee recorded that the property road at that time cut through midden material for a distance of 100 m, the maximum depth of deposit observed by him being about 60 cm. The finds were said to be located in a matrix of gray-black soil, above a subsoil of buff marl grading into coral limestone. Artifacts remarked upon by Lee included pottery with cross-hatched incised decoration, both plain and filleted rim sherds, griddles, flint flakes, and hammerstones of igneous or metamorphic rock. One sandstone net sinker was found on the surface. A joint team from UWI and Murray State University carried out excavations in 1999–2001 (Allsworth-Jones and Wesler 2003).

Six trenches have been excavated. The three westernmost trenches were shallow and yielded very little information. The northernmost trench was also quite shallow and was affected by erosion and deflation. The mid trench on the eastern side and the southernmost trench, however, were very productive. The southernmost trench produced the most complete stratigraphy, to a maximum

Table 20. Radiocarbon Dates from Green Castle Southern Trench.

Occupation 3	Level 2	Beta-134379	330 ± 60 B.P.
	Level 3	Beta-158966	430 ± 80 B.P.
Occupation 2	Level 7	Beta-158963	760 ± 60 B.P.
Occupation 1	Level 13	Beta-158965	820 ± 60 B.P.
	Level 13	Beta-158964	920 ± 60 B.P.

Table 21. Radiocarbon Dates from Green Castle Mid Trench.

Level 2	Beta-134378	70 ± 50 B.P.
Level 3	Beta-158967	750 ± 60 B.P.
Level 7	Beta-158968	480 ± 80 B.P.
Burial 1	Beta-158969	660 ± 40 B.P.

depth of 1.5 m. The mid trench reached a maximum depth of 80 cm. Three consecutive occupations were detected in the southernmost trench, separated by reddish gravelly more or less sterile layers. The difference between the two lowest occupations was particularly clearly marked, the basal level being completely sealed by a horizon of large loose rubble up to 25 cm thick. The situation was much more complex in the eastern part of the mid trench, where there was an artificially cut burial pit and probably other cut and fill features as well.

A number of radiocarbon dates have been obtained for the site from the Beta Analytic laboratory. For the southern trench they are presented in Table 20.

Rounding, and using current calibration procedures, occupation 1 seems to have extended from about A.D. 1050 to 1250. There is an overlap with occupation 2, but this is consonant with the hypothesis advanced by Simon Mitchell (Department of Geography and Geology, UWI) that the rubble horizon separating them may have represented quite a sudden event. Occupation 3 lasted from about A.D. 1440 to 1550, assuming that the latter is the practical upper limit for the Pre-Columbian settlement of the site. There are no indications of Spanish contact.

The dates in the mid trench are presented in Table 21.

The date for burial 1 is an accelerator mass spectrometry (AMS) date. The dates for the burial and level 3 are quite similar, and are broadly comparable to those for occupation 2 in the south trench. The date for level 7 corresponds with that for occupation 3 in the south trench, and on the face of it there is a

stratigraphic inconsistency here. But this may be explained by the cut and fill situation in this part of the trench. The date for level 2 is modern.

In addition to these dates, a number of oxidizable carbon ratio (OCR) age determinations were obtained for the site, according to the method described by D. S. Frink (1994). In his work at the Wickliffe site in Kentucky, Wesler (2001) found these determinations reliable and consonant with the radio-carbon dates. At Green Castle there are evident discrepancies between the two methods, which may possibly be due to the fact that the model used for OCR dating tends to assume a steady build-up of deposits, and the mode of formation at Green Castle may have been quite different.

Apart from burial 1 in the mid trench, another burial, that of a child, was discovered in the south trench. Burial 2 occurs at a depth of about 35 cm. The date of 430 ± 80 B.P. was obtained on material in immediate proximity to it; hence, evidently it belonged to occupation 3.

The two burials were analyzed and in part excavated by Ana Luisa Santos (Coimbra University). Adult burial 1, probably a male, was interred in a flexed position, with an associated ceramic vessel at his feet. He was lying on his left side, with the right hand gripping the left forearm. Burial 2 is that of a child, with an estimated age at death of about 7. The inhumation was in a flexed position, with all the bones from the lower limbs so much contracted as to suggest that he or she may have been bound before burial. The child was lying on its right side, with the left hand gripping the right elbow. In their general posture, therefore, there is a definite parallel between the two burials.

The bulk of the archaeological material consists of ceramic fragments as well as chert and other stone pieces. In general the decoration would appear to indicate that this is a White Marl site, with no traces of Redware. Some of the more unusual pieces found include potsherd and shell disks, a bone needle, a ground stone artifact that may possibly be a fragment of a monolithic axe, as well as a fragment of a petaloid celt, and several beads. There are large numbers of shells. Apart from Pleurodonta, the majority identified so far are marine gastropods that live mostly in the intertidal zone on the rocky shore. The faunal remains discovered in 1999 in the northern trench and the upper levels of the mid and southern trenches were studied by Jessica Allgood (2000), whereas the analysis of the faunal material recovered in 2000–2001 from the lower levels of the mid and southern trenches and the three western trenches was carried out by Lisa-beth Carlson (2002).

Allgood counted 7,110 individual specimens and Carlson counted 13,834. With a combined total of almost 21,000 specimens, this represents, as Carl-

son says, “the largest analysed faunal sample from Jamaica to date.” The task was made easier, if not shorter, by the fact that, as she also says, the “density of bone is high and preservation of the pieces of bone is excellent.” The two sets of results overlap but are not identical. Allgood identified 19 species all told, of which fish accounted for 14, the majority being reef dwellers. Carlson identified 50 species, excluding invertebrates. Of these three were mammals, six birds, four reptiles, and 37 fish, including sharks. The minimum number of individuals (MNI) represented by these species came to 320, divided as follows: mammals 61, birds nine, reptiles 13, fish 237. Twenty-five percent of these individuals therefore can be regarded as land dwellers and 75 percent are marine. In accordance with Allgood’s results, the majority of the fish (41 percent) are reef dwellers, particularly parrot fishes (Scaridae) and groupers (Serranidae), the remainder being inshore (18 percent) or are of mixed habitat (16 percent). It is quite clear that, as Carlson says, fish represented “the most important resource” for the inhabitants of the site, and that they could all have been caught in Annotto Bay itself, using either hooks and lines or nets and traps. The mammals are dominated by *hutia*. Allgood identified two bones as belonging to guinea pig (*Cavia porcella*) but Carlson found none. The guinea pig is not indigenous to Jamaica, but it has been found elsewhere in the Greater Antilles.

References: AJ 1978, 1:3, 7; 1978, 2:5; Allgood 2000; Allsworth-Jones and Wesler 2003; Carlson 2002; Frink 1994; Wesler 2001.

Newry (Y27)

Reported by Robin Crum-Ewing in 1985 and mapped by Lee in that year. “The middens are on a hill-top and contain White Marl type pottery, as well as numerous terrestrial snail shells, marine and brackish water shells, flint flakes, and fragments of tools made from greenstone and conch shells.” According to Lee’s map, there were seven probable house sites at the east end of the hill.

Excavations were conducted at this site by the UWI–Murray State University team in 2002. Five 1 x 1 m units turned out to be relatively unproductive, but were useful in delimiting the area of effective occupation. The deepest deposits were concentrated in the southwestern portion of the site, where three 1 x 1 m trenches reached maximum depths of just over and just under 1 m and 40 cm respectively. Four radiocarbon dates were obtained in the two deepest trenches, see Table 22.

In both cases the results are stratigraphically consistent and are comparable one with the other. The calibrated equivalents suggest that the site was occupied between approximately A.D. 970 and 1260, which is earlier than but over-

Table 22. Radiocarbon Dates from Newry.

13–14 S 6–7 E		
level 4	Beta-170433	850 ± 60 B.P.
level 6	Beta-170434	1020 ± 60 B.P.
9–10 S 1–2 W		
level 4	Beta-170435	950 ± 60 B.P.
level 8	Beta-170436	1040 ± 40 B.P.

laps with occupation 1 at Green Castle (Y25). The excavated material from all trenches amounted to about 3,200 potsherds, 580 pieces of chert, some pieces of coral, and a few other items including ground stone and worked shell. The pottery is generally similar to that found at Green Castle but there are some differences of detail.

Lisabeth Carlson (2003b) analyzed the fauna. Five thousand, three hundred forty-four bones produced a minimum number of individuals (MNI) of 243. There were 27 species of bony fishes and shark, four species of mammal, seven species of bird, and four species of reptile. In terms of MNI, fish and shark were predominant, with 150 individuals. Most numerous were groupers (Serranidae), freshwater sleepers (Eleotridae), and parrot fishes (Scaridae). The freshwater fauna also included one American eel (*Anguilla rostrata*). The most common terrestrial mammal was *hutia*, with an MNI of 30. It should be noted that there was also a minimum of 10 iguanas (*Cyclura collei*), which supports Johnson's identification of this species at Cinnamon Hill (J10). Birds are relatively frequent. They include one specimen of an olive-throated parakeet (*Aratinga nana*). As Carlson points out, parrots were a popular trade item among the Taíno. This parakeet is local to Jamaica, and would have been valued for its feathers. According to Carlson's calculations, marine species provided 64 percent of the usable meat weight consumed at this site, whereas terrestrial species provided 36 percent. As at other sites investigated by the UWI–Murray State University team, it was reported that “the density of bone is very high and the preservation of the pieces of bone is excellent.”

References: AJ 1985, 1 and 2:5; Carlson 2003b.

Table 23. Comparison of Faunal Remains from Four Archaeological Sites in Jamaica (after E. S. Wing, in Silverberg et al., 1972 and AJ 1977,1:2-7).

	Bellevue				White Marl		Bengal		Rio Nuevo	
	Layer 2		Layer 3		MNI	%	MNI	%	MNI	%
	MNI	%	MNI	%						
LAND										
<i>Geocapromys</i>	84	82	19	79	357	50	29	22	107	18
<i>Oryzomys</i>	2	2	1	4	14	2			7	1
<i>Canis</i> /Caprinae	1	1			5	1			1	
Aves	1	1	1	4	27	4			11	2
<i>Cyclura</i>	2	2			38	5				
Subtotal	90	89	21	88	441	62	29	22	126	21
FRESH WATER										
Testudines							1	1		
BEACHES										
Cheloniidae			1	4	20	3	4	3	15	3
INSHORE										
<i>Trichechus</i>	1	1			1					
<i>Crocodylus</i>	1	1			5	1				
<i>Aetobatis</i>	1	1			1				1	
<i>Centropomus</i>	3	3	1	4	40	6			4	1
<i>Caranx</i>	1	1			18	3	5	4	38	6
Sparidae	1	1			20	3			6	1
<i>Dormitator</i>			1	4						
Others					92	13	1	1	48	8
Subtotal	8	8	2	8	177	25	6	5	97	16
BANKS/REEFS										
Serranidae	1	1			11	2	36	27	94	16
<i>Lutjanus</i>	1	1			27	4	10	8	44	7
Others					36	5	36	27	174	29
Subtotal	2	2			74	10	82	62	312	52
OFFSHORE										
Scombridae	1	1			1		9	7	50	8
Others							1	1		
Subtotal	1	1			1		10	8	50	8
TOTAL	102		24		713		132		600	

Table 25. Rodney's House (S5) Vertebrates and Crabs MNI (modified after S. Scudder, 1992).

		MNI	%
Mammals	5 families		
<i>hutía</i>	<i>Geocapromys brownii</i>	89	
rice rat	<i>Oryzomys antillarum</i>	7	
others	including manatee	6	
total		102	14
Birds	4 families		
total		61	8
Reptiles	3 families		
iguana	<i>Cyclura collei</i>	28	
sea turtles	Cheloniidae	12	
saltwater crocodile	<i>Crocodylus acutus</i>	7	
total		47	6
Cartilaginous fish [Chondrichthyes]	2 families		
requiem sharks	Carcharhinidae	8	
others	sharks and stingray		
Bony fish [Osteichthyes]	23 families		
mojarras	Gerreidae	69	
snappers	Lutjanidae	38	
porgies	Sparidae	30	
grunts	Haemulidae	29	
groupers	Serranidae	27	
snook	Centropomidae	25	
triggerfish	Balistidae	21	
jacks	Carangidae	19	
others	(including sharks & stingray)	99	
total (all fish)		365	49
Crabs and Lobsters	6 families		
soldier crab	<i>Cardisoma</i>	98	
land crab	<i>Gecarcinus</i>	17	
hermit crab	<i>Diogenidae</i>	13	
blue crab	<i>Callinectes</i>	40	
others	(including spiny lobster)	4	
total		172	23
Total MNI		747	

Appendix B

Complete List of Sites by Parish with Lee Codes

St. Ann

A1 Fortlands	A27 Upper Alloa
A2 Armadale	A28 Windsor Housing Estate
A3 St. D'Acre	A30 Cardiff Hall Beach
A4 Alloa	A31 Malvern Park
A5 Mount Boon	A32 Seville
A6 Discovery Heights	A35 Greenwich Park
A7 Richmond Pen	A36 Richmond Hill
A8 Bengal	A38 Bengal North East
A9 Watt Town	A39 Llandoverly
A10 Scarborough	A40 Dover
A11 Orange Valley	A41 Huntley
A12 Flamstead	A43 Upton
A13 Retreat	A44 Lake House
A14 Tobolski	A45 Bellevue–White River
A15 Little River	A46 Green Hill
A16 Liberty Hill	A47 Drax Hall
A17 Seville Parsons Gully	A48 Priory
A18 Tydenham	A49 Sans Souci
A19 Windsor	A50 Mammee Bay
A20 Cranbrook	A51 New Seville*
A21 Bellevue Chalky Hill	
A22 Friendship	AC1 Coventry

*New sites

A23 York Castle
A24 Moneague
A25 Ocho Rios
A26 Golden Spring

AC2 Adstock
AC3 Silent Home
AC4 Belle Air
AC5 Aboukir*

Clarendon

C1 Round Hill
C2 Braziletto
C3 Inverness
C4 Portland Ridge
C5 Holmes Bay
C6 Toby Abbott
C7 Harmony Hall
C8 Wallman Town
C10 Old Harbour Hill
C11 Round Hill NW Ridge
C12 Logie Green
C13 Breadnut Gully
C15 Oakes
C16 James Hill

C19 Salt River
C20 Sevens
CC1 Milk River
CC2 Jackson Bay
CC4 Portland Cave
CC6 Jackson Bay East
CC8 High Dome Cave
CC9 God's Well Junction #1
CC10 God's Well Junction #2
CC14 Jackson Bay South
CC15 Taylor's Hut #1
CC17 Taylor's Hut #2
CC18 Little Millers Bay
CC22 Potoo Hole*

St. Elizabeth

E1 Alligator Pond
E2 Fort Charles
E3 Knapville
E4 Great Pedro Bay
E5 Alligator Pond River
E6 Long Acre Point
E7 Bull Savannah
E8 Billy Bay
E9 Lovers Leap
E10 Gilnock
E11 Calabash Bay
E12 Black River
E13 Sandy Bank
E14 Fort Charles House
E15 Fort Charles Nembhard

EC2 Boy Hole Cave

EC3 Money Cave
EC4 Pedro Bluff
EC5 Parchment
EC6 Peru
EC7 Bull Savannah #1
EC8 Ballard's Valley #1
EC9 Ballard's Valley #2
EC10 Baalbec
EC11 Duff House
EC12 Bull Savannah #2
EC13 Breadnut Wood #1
EC14 Breadnut Wood #2
EC15 Warminster
EC16 Redbank
EC17 Dildo Point
EC18 Simeon Genus
EC19 Reynold Bent

Hanover

H1 Haughton Hall
H3 New Found River
H5 Mosquito Cove
H6 Round Hill Beach
H7 Flint River
H8 Point Pen

H9 Spaniard Hill
H10 Ireland Pen
H11 Tamarind Hill
H12 Spring Garden
H13 Paradise
HC1 Abingdon

St. James

J1 Hartfield
J2 Spotty Hill
J3 Fairfield
J4 Bogue
J7 Williamsfield
J9 Barnet View Gardens
J10 Cinnamon Hill
J11 Mount Salem
J12 Salt Spring
J14 Virgin Valley
J15 Spot Valley

J16 Leader Avenue
J17 Upper Retirement
J18 Lower Retirement
J19 Bogue Beach
J20 Rose Hall (Tryall #1, Mammee Hill)
J21 Chew Stick
J22 Tryall #2
J23 Tryall #3

JC1 Kempshot
JC7 Spot Valley Cave

Kingston and St. Andrew

K1 Jack's Hill
K2 Wareika
K3 Hope Tavern
K5 Norbrook
K6 Martello Tower
K7 Tower Hill
K8 Long Mountain North
K9 Rennock Lodge
K10 Ivor

K11 Chancery Hall
K13 Bellevue—Mannings Hill
K14 Molyne's Mountain
K15 Coopers Hill
K16 Above Mona Reservoir

KC1 Halberstadt
KC2 Dallas Castle
KC7 Beverly Hills

Manchester

M1 Ward's Bay
M2 Gibb's Run
M3 Rowe's Corner
M4 Bottom Bay
M5 Cuckold Point

M10 Bossue
M11 Anderson

MC1 Canoe Valley
MC3 Image Cave

M6 Gibb's Run South East
M7 Porus
M8 Auchtembeddie
M9 Montpelier

MC4 Little Bay
MC5 Cuckold Point Cave
MC6 Gut River #1
MC7 Gut River #2

St. Thomas

O1 Belvedere #1
O2 Spanish Wood (Duckenfield)
O7 Rozelle
O8 Creighton Hall
O9 Bowden
O10 Orange Park
O11 Rozelle Falls

O12 Green Wall
O13 Hillside
O17 Braham
O18 Belvedere #4
O20 Rhodes
O21 Prospect Point
OC1 Cambridge Hill Cave

Portland

P1 Passley Gardens
P4 Lennox

PC1 Nonsuch Cave
P5 Nanny Town*

St. Catherine

S1 White Marl
S2 Dover
S3 Mount Rosser
S4 Mahoe Ridge
S5 Rodney's House
S6 Little Goat Island
S8 Marlie Mount
S11 Great Salt Pond
S12 Naggo Head

S14 Caymanas Bay
S15 Colbeck

SC1 Mountain River Cave
SC2 River Head (Byndloss Mountain)
SC5 White Marl #1
SC6 Worthy Park #1
SC7 Two Sisters Cave (Louzy Bay)
SC10 Worthy Park #2

Trelawny

T1 New Forest
T2 Braco
T3 Spring
T4 Stewart Castle
T5 Rio Bueno
T6 Wales
T7 Pantrepant
T8 Irving Tower

T12 Sherwood
T14 Pembroke
T16 Hyde
T17 Harmony Hall

TC1 Pantrepant West
TC2 Pantrepant East
TC3 Holland Hill

T9 Clifton

TC4 Windsor

T11 Hampstead

TC6 Hyde

Westmoreland

W1 Mount Eagle

W11 Brighton

W2 Galloway

W12 Homer's Cove

W4 Negril Bridge

W13 Paradise Park*

W5 Bluefields

W14 Sweetwater*

W6 Duck Pond

WC2 Negril Cave

W7 Negril Spots

WC3 New Mountain Cave

W8 Mount Edgecombe

WC4 Westcliffe Cave

W9 Sweet River

WC5 Wire Lane Cave

W10 Auchendown

WC6 Norman Black (Orange Hill
Cave)

St. Mary

Y1 Egypt

Y18 Salisbury

Y2 Gayle

Y19 Coleraine

Y4 Rio Nuevo

Y20 Dingwall

Y5 Eden Hill

Y21 Fort Haldane

Y6 Pagee Point

Y23 Fellowship Hall

Y8 Wentworth

Y24 Oxford

Y14 Iter Boreale

Y25 Green Castle

Y15 Nonsuch

Y26 Dover Castle

Y16 Fort Stewart

Y27 Newry

Y17 Tweedside

YC1 Dryland Cave

Appendix C

List of Appendixes in the CD-ROM

The Appendixes were numbered as the work progressed on the creation of the CD-ROM, so they do not follow an obvious order, but they do fall into five broad categories, as follows: (1) human remains, (2) petroglyphs, pictographs, and wooden carvings, (3) details of sites, (4) fauna and environment, (5) artifacts of various kinds. The Appendixes are therefore listed below according to these categories and by number. The site to which each Appendix relates (and therefore the location at which it can be found) is also listed by name and by its Lee code.

Human Remains

1. Skull recording form (CC15 Taylor's Hut #1).
2. Skull measurements (CC15 Taylor's Hut #1, EC12 Bull Savannah #2, Hellshire 1 and 2).
3. Skull recording form (EC12 Bull Savannah #2).
4. Tibia measurements (E12 Black River).
5. Femur measurements (E12 Black River).
6. Humerus measurements (JC7 Spot Valley Cave).
32. Adult cranium 1 (OC1 Cambridge Hill Cave).
33. Adult cranium 2 (OC1 Cambridge Hill Cave).
34. Juvenile cranium, 1st view (OC1 Cambridge Hill Cave).
35. Juvenile cranium, 2nd view (OC1 Cambridge Hill Cave).

Petroglyphs, Pictographs, Wooden Carvings

- 12, 13, 14, 15. Petroglyphs (MC1 Canoe Valley).
17. Petroglyph (AC1 Coventry).

18. "Principal figure on a projecting piece of rock" (Duerden 1897) (SC1 Mountain River Cave).
19. "Fallen piece of rock with carvings" (Duerden 1897) (SC1 Mountain River Cave).
21. Petroglyph (TC2 Pantrepant East).
36. Petroglyph (MC5 Cuckold Point Cave).
37. Petroglyph (CC10 God's Well Junction #2).
38. Petroglyphs (MC6 Gut River #1).
39. Petroglyphs (CC1 Milk River).
40. Petroglyph (EC19 Reynold Bent).
41. Pictographs (JC7 Spot Valley Cave).
44. Human bird-headed figure (MC3 Image Cave).
45. Male figure, probably Boinayel the Rain Giver (MC3 Image Cave).
46. Probably male figure, forming part of a *cohoba* stand (MC3 Image Cave).
48. Male figure, probably Baibrama (AC5 Aboukir).
49. Bird figure, forming part of a *cohoba* stand (AC5 Aboukir).
50. Scoop with handle, probably Maquetaurie Guayaba (AC5 Aboukir).

Details of Sites

7. Excavated areas 1977 (K13 Bellevue–Mannings Hill).
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ABORIGINAL INDIAN REMAINS IN JAMAICA.

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Curator of the Museum of the Institute of Jamaica;

WITH A "NOTE ON THE CRANIOLOGY OF THE ABORIGINES OF JAMAICA,"

BY PROFESSOR A. C. HADDON, M.A., D.Sc.

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This article has been rekeyed and reformatted from the original text. Original page numbers are included in brackets, and the footnotes have been inserted into the text at the appropriate locations. In some places, illustration captions have been shortened. Errata have been corrected, but the errata notations remain in this text for reference. The included illustrations are taken from the original and are the best quality obtainable at this time.

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The figures on Plate Ia are from photographs by Prof. Haddon. Figures 5–7, Plate V, and figure 1, Plate VI, are from photographs by Mr. J.W.C. Brennan. Figure 3, Plate VI, and the two figures on Plate VII, are from photographs by Mr. J. F. Brennan. All the drawings, except Figure XII, copied from Smithsonian Report, 1884, and Figure XI, which is a reproduction of an engraving in “Archaeologia,” 1803, have been made by the author.

[Errata below have been corrected in this edition. Original document was set in two columns.]

Plates IV, V, VI, VII have received Arabic instead of the usual Roman numerals.

Page 24, second column, for Plate IV, read Plate VI, figure 1, for Plate V, read Plate V, figure 5.

Page 28, first column, for Plate IV, read Plate VI, figure 1.

Page 28, second column, for Plate IV, read Plate V, figure 5.

Page 29, first column, for Plate IV, read Plate V, figure 2.

Page 30, first column, for Plate IV, read Plate V, figure 4.

Page 32, first column, for Plate II, read Plate I.

[1]

ABORIGINAL INDIAN REMAINS IN JAMAICA

Introduction

The following circular was issued from the Museum of the Institute of Jamaica on the 7th August, 1895:

AN EXHIBITION OF ARAWAK REMAINS

(To include objects illustrating the life and customs of the aboriginal inhabitants of Jamaica.)

SIR,—The new Museum buildings of the Institute are now completed, and the Board of Governors proposes that the occasion should be signalized for the development of the Archaeology of Jamaica.

The recent discoveries of human and other remains at Halberstadt, and of the carvings investigated by Lady Blake at Saint John's, have awakened considerable interest in the subject in the Island, and indicate that much more may still be done, if sufficient encouragement is given. They have also brought out prominently the fact that Jamaica possesses but a very indifferent public collection of objects connected with its aboriginal Indian inhabitants. There is, however, evidence that many specimens of interest and importance are to be found in the possession of private individuals. Also, that many more may probably be obtained by a thorough search in caves and other places.

The Board of Governors therefore proposes to hold a public exhibition of Arawak remains, to illustrate, as far as possible, the life and customs of the aboriginal inhabitants of Jamaica, and appeals to the private possessors of such remains to help, either by the loan or the gift of specimens. Such private donations or loans will be fully acknowledged in the exhibition, and special care given them. The Exhibition will probably be opened towards the end of September, and continue for two or three months. It is intended to arrange special Lectures and Demonstrations on the objects.

The Board hopes that by means of the Exhibition not only will the public interest in everything that pertains to the past history of the Island be stimulated, but also that a more valuable and representative collection of objects may be accumulated by the Museum, where they can be kept properly labeled and exhibited, and remain of permanent public value.

The following objects are those specially desired: "Thunderbolts," darts, war-clubs, arrowheads, stone-hatchets, stone-hammers, bead ornaments, Indian pottery, remains from kitchen middens (marine shells, bones, pottery), human skulls and bones, canoes, old vessels, old coins, inscriptions, objects of worship, articles of clothing.

The Curator of the Museum will be very glad to communicate with anyone having such remains in his possession, or willing to assist by searching for them. Gifts or loans will be thankfully acknowledged, and, in the case of the latter, carefully returned when the Special Exhibition is closed.

I am, etc.,

J. E. Duerden, Curator.

The result of this endeavour was that the anticipations of the Governors were confirmed and supported, and a sufficient supply of objects, connected with Jamaica's aboriginal Indian inhabitants, was contributed to enable the Exhibition to be opened in November. The interest aroused in the island has also brought to notice a number of relics not previously known, and has led to various discoveries and investigations of importance to the Anthropology of Jamaica and of the West Indies generally.

A complete list of the objects presented and lent to the Museum for this special purpose will be found in the Annual Report of the Institute for the year 1895–96.

The following, however, amongst the many Jamaican exhibits, call for particular notice.

- A collection of human crania, bones, and other objects from the Halberstadt cave, presented by Mr. B. S. Gosset and the Rev. W. W. Rumsey.
- A collection of vessels, crania, etc., from the Richmond Hill and Botany Bay caves, lent by the Rev. W. W. Rumsey.
- A collection of 171 stone implements, lent by Inspector Church.
- A collection of fragments of aboriginal pottery, lent by Miss Moulton Barrett.
- Collections of stone implements, presented by Dr. G. J. Neish, Mr. W. H. Plant, and others.
- [2] Stone implements, a cast of a monolithic axe, an aboriginal skull and vessel, lent by Lady Blake.
- Photographs of rock-carvings and rock pictures, presented by Mr. J. F. Brennan.

In addition to these, an important series of objects, illustrative of the present-day life of the natives of British Guiana, was generously lent by the Demerara Museum, through its Curator, Mr. J. J. Quelch, for comparison with the local exhibits.

The Rev. T. W. Bindley, M.A., of Barbados, also lent a number of Barbadian shell implements and other objects for the same purpose.

The discoveries made, mostly since the issue of the circular, and which have been investigated and are now reported upon, may be classified as follows:

Kitchen-Middens, Refuse-Heaps, or Shell-Mounds

Accumulations of the above character, occurring at Norbrook, were described a few years ago, but no further advance in the subject had been made before the present enquiries. These have now demonstrated that similar remains, consisting of deposits of shells, pottery, fish and Indian coney bones, implements, ashes, etc., occur in numerous localities near the sea border, and extend over considerable areas on both the north and south sides of the island. They have been investigated at the following places: Stewart Castle, Wales, Retreat, Cranbrook, Tryall, California, the Long Mountain, Botany Bay, Hope, and Caymanas; while information of others has been received from Vere in Clarendon, Hanover, Williamsfield, and Belle Vue and Friendship in St. Ann.

Caves Containing Aboriginal Remains

Jamaica has long been known to contain, in the numerous limestone caves throughout the island, many skulls, bones, and other relics of its Indian inhabitants; but these have never been systematically examined, nor the objects described.

In addition to the Halberstadt cave, notes upon which have already appeared in the Journal of the Institute and in *Nature*, caves at the following places have been investigated: Botany Bay, Cambridge Hill, and California; while details have been collected of others occurring at Bloxburgh, Dallas Castle, Goat Island, District of Vere, Pedro, Hounslow, the Red Hills, and in the parishes of Westmoreland and Hanover.

Rock-Carvings and Rock-Pictures

In the parish of St. Catherine has been discovered a series of aboriginal Rock-carvings, mostly deep incisions representing human figures and heads; also, in connection with them, a number of rude pictorial representations of various animals, such as lizards, turtles, and birds. A rude incised representation of the human face and figure has been met with in a recess in the limestone rocks of St. Mary, and a similar figure at Pantrepant, Trelawny.

There is little doubt as to the aboriginal character of all these, they having features in common, and also relationships with other figures described from various West Indian Islands.

While this account was being prepared, Mr. Maxwell Hall sent information relating to numerous carvings of human faces occurring in a cave on his property Kempshot, near Montego Bay.

Pottery

Many examples of aboriginal pottery, both perfect and in fragments, have been collected from the various caves and kitchen-middens. In shape, ornamentation, and handles, it is throughout of a fairly uniform, simple character.

Implements

Several hundred specimens of stone implements of various forms—celts, chisels, axes, mealing-stones—have been gathered together. Flaked flints and shell implements have been found, mostly from the shell-heaps.

Calcedony beads, perforated ornamental shells, and perforated stones are also described.

Images

The Hon. D. Campbell lent to the Exhibition two perfect stone images, probably examples of the idols or *Zemes* the Indians are stated by Columbus and other writers to have worshipped. Two other imperfect marble images, obtained from the Long Mountain shell-heaps, are perforated behind for suspension, and are, no doubt, representatives of the amulets the Indians are known to have worn.

Where material and information were accessible, comparison has been made of the local objects with those of the other West Indian Islands, or with the continent of America; especially amongst the latter, with those of the Indians, both ancient and modern, of British Guiana, to whom the former inhabitants of Jamaica, and many of the other islands, are supposed by some authors to be most closely related; also, where possible, confirmatory evidence of the customs and conditions of the aborigines has been adduced from the writings of the Spanish historians of the time of Columbus.

My thanks are due to the very numerous contributors of specimens, materials, and information from all parts of the island. How deep is the necessity for this obligation can only be realized by a perusal of the following pages. Dr. J. W. Plaxton and Dr. G. C. Henderson have assisted greatly by their helpful criticisms, and Mr. H. Vendryes by his knowledge of Jamaican Mollusca.

[4]

CHAPTER I KITCHEN-MIDDENS, REFUSE-HEAPS, SHELL-HEAPS, OR SHELL-MOUNDS

Any of these terms are sufficiently expressive and well known. With regard to similar accumulations in America, Nadaillac (1885) states that there they are “so generally composed almost entirely of marine or fresh-water shells, that the term shell-heap, as applied to them, has here largely replaced the more cumbersome term [kitchen-midden] derived from the Danish.”

Mr. Cyrus Thomas in the “Report on the Mound Explorations” (1894), distinguishes between a “heap” and a “mound,” regarding the former as a mere accumulation of rubbish, while the latter is constructed with a specific design in view. Limited in this way none of the Jamaican deposits would be spoken of as “mounds,” seeing that they have always been formed by the mere accumulation of refuse matter.

Within the past few months, as mentioned in the Introduction, a number of shell-heaps have been discovered in Jamaica, and more or less systematically explored. They occur, occupying extensive areas, often several acres in extent, on both the north and south sides of the island, and in every case exhibit much the same characters.

They have been found, up to the present, at the following spots [see Map on accompanying CD].

On the South side: in the parish of St. Andrew, on the top and southern declivity of the Long Mountain, at Botany Bay, Norbrook, and Hope; in St. Catherine, at Marl Hill on the Caymanas Estate; and in Clarendon, at Vere. *On the North side:* in Hanover, around Green Island Harbour and Lucea; in St. James, at Williamsfield, Mammee Hill and Spotty Hill on the Tryall Estate, and at Sheep Pen Pasture on the California Estate; in Trelawny at Wales, and Stewart Castle; in St. Ann, at Retreat, Cranbrook, Friendship, and Belle Vue.

In the majority of cases the accumulations occur on elevations which command a good prospect of the sea and country for miles around, and, so far, have been discovered only near the sea border, those at Retreat, situated about six miles from the sea, being the farthest inland.

The deposits consist, for the most part, of a great variety of species of both land and marine shells, associated with fish bones and spines, lower-jaws and bones of the Indian coney, turtle bones, crab claws, quantities of broken pottery, broken stone and shell implements, often with layers of greyish wood ashes mingled with fragments of charcoal. With a single exception, no object

indicative of European influence has been found amongst them, the occurrence of which cannot be easily explained.

Often, as at Stewart Castle, the accumulations are in the form of distinct mounds or elevations above the general surface of the ground; in other places, as at Tryall and California, where the land has been disturbed by cane-planting, they are distributed irregularly over the surface and are of no great depth. The thickness of the deposits is very variable, in some places being five or six feet, in others merely superficial. Occurring always from or near the surface, and sometimes on steep inclines, the objects have been further distributed by the washing from the violent tropical rains. Some of the accumulations, along with the accompanying earth and stones, are partially consolidated, while others are very loose. In most, the materials exhibit no regular arrangement, but in others, as at Stewart Castle and Long Mountain, they are found embedded in distinct layers of ashes, earth, or marl.

Shells

The relative proportions and species of land and marine shells vary. In places more distant from the sea, e.g., Retreat and Stewart Castle, species of *Helix* predominate, but at Norbrook and the Long Mountain, not far from the shore, marine shells are much in the ascendant. The giant conch, *Strombus gigas*, and *Turbo pica*, occur in all, while *Pyrula melongena* is the more plentiful and also universal. *Strombus pugilis* is one of the common univalves on the south side. *Cokadia (Lucina) tigerina* is the commonest bivalve in mounds of the north side, but is rarely obtained in those of the south, its place being taken by the various species of *Arca*, while *Chama lazarus* is also plentiful.

[5] *Helix acuta*, one of our most abundant and large land shells, predominates at Stewart Castle and Retreat, and occurs, in some cases no doubt naturally, in less numbers in the others. *Helix jamaicensis* is only found in quantities in the deposits of the north side, being limited to-day in its distribution to the western part of the island. *Ampullaria fasciata* is the only fresh-water gastropod met with.

In practically all the different species of gastropods, though not in all examples, is a large, irregular, artificial perforation, varying in position from half an inch to an inch behind the mouth of the shell (Fig. I.); perhaps made to facilitate the extraction of the animal, though bearing no relation to the position of attachment of the adductor muscles.

It has also been suggested that the aperture may have been made by the Indians for the purpose of stringing the shells together while on their collecting expeditions. One correspondent informs me that this is still carried out in the case of gastropod shells containing hermit-crabs. The giant conch is used plentifully



Fig I. *Helix acuta*, Lamk., artificially perforated.

today on the north side as food and for the extraction of pearls. The removal of the animal is facilitated either by breaking off the apex of the spiral or by perforating the shell in the region of the adductor muscle.

Of specimens submitted to him, Prof. O. T. Mason writes: "The shells have their allies in both Florida and in South America, where the perforations are of three kinds—for hafting, for stringing, and for touching up a hard edge for scraping wood. These shells are closely allied also to South American specimens. In our collection here, there are a great many conch shells from Florida that have

been used roughly as tools, and clam and mussel shells are neatly pierced for handles. There are also many roughly broken through, and Von den Steiner, in his work on Brazil, says that he has seen the people on the Shinghu break the holes and use the sharp edges for scraping down war clubs."

The perforation is always large in *Turbo pica*, often having a diameter of two or three inches. The majority of the shells are otherwise perfect, and in the Lamellibranchs the valves are occasionally still united. Some of the shells give evidence of having been subjected to the action of fire.

The marine species obtained are all very common forms around the shores today, especially on the south side, and on the score of present distribution, there seems no particular reason why different species should be more characteristic of one series of accumulations than of another. It is evident also, that the edible quality of the mollusk had not much determining influence in this selection; while all the representatives of the Ostreidae can be recommended for food, and those of *Pyrula*, *Strombus*, *Codakia*, and *Arca* may not be too coriaceous, most of them being still used in places, not much can be said in approval of the Indians' choice of many of the others. The following list, arranged somewhat in the order of predominance of occurrence, will show the great variety of species met with:

Gastropods

Pyrula melongena, Linn.

Turbo pica, Linn.

Helix acuta, var. *patina*.

Helix acuta, Lamk.
Strombus pugilis, Linn.
Strombus gigas, Linn.
Murex pomum, Gmelin.
Murex brevifrons, Lamk.
Nerita antillarum, Gmelin.
Nerita versicolor, Lamk.
Helix jamaicensis, Gmelin.
Helix sinuata, Lamk.
Neritina virginea, Lamk.
Ampullaria fasciata, Lamk.
Choanopoma interruptum.
Fasciolaria tulipa, Lamk.
Purpura patula, Lamk.
Fissurella nodosa, Lamk.
Chiton, sp.

Lamellibranchs (Pelecypods)

Codakia (Lucina) tigerina.
Arca noae, Linn.
Arca occidentalis, Deshayes.
[6]*Arca orbigny*, Reeve.
Arca deshayesi, Hanley.
Arca scapha, Lamk.
Chama lazarus, Linn.
Asaphis coccinea, Gmelin.
Perua obliqua, Lamk.
Mytilus exustus, Linn.
Avicula radiata, Lamk.
Ostrea parasitica, Gmelin.
Tellina fausta, Dilwin.
Modiola americana, Leach.
Venus zigzag, Linn.
Pecten zigzag, Chemn.

Bones

Mammalian bones. The bones of the Indian Coney (*Capromys brachyurus*, Hill.) met with, are mostly limb bones, lower jaws with teeth, and occasionally ribs,

vertebrae, and parts of the upper jaws. Some of the long bones appear artificially broken. They are found in all the mounds.

The short-tailed *Capromys* is an animal about the size of a rabbit, and, at present day, is the only indigenous land mammal of Jamaica, with the exception of bats. It is now very rare in the island, but is occasionally caught in some of the mountainous parts of Portland and Trelawny. Its flesh is considered by many good eating. There is no doubt that it was much more abundant and more generally distributed in former times, the honey-combed limestone districts being especially suited to its retiring habits. Its almost extinction in recent times is, in large measure, a result of the introduction into the island of the mongoose (1896). The universal occurrence of its bones in the mounds demonstrates that it must have been a general article of food for the Indians in the past.

A single canine tooth of some carnivore was found in the Long Mountain deposits, at a depth of fourteen inches below the surface. The Indians are known to have possessed a mute dog-like creature, the *Alco*. No pure examples of this however occur at the present day.

Human bones have been discovered in connection with kitchen-middens at Cranbrook and Caymanas, but not under such circumstances as to allow of any decision as to whether they are the remains of a cannibal feast or of orderly burial.

Turtle bones. Fragments of the limb and carapace bones of some turtle were obtained from several deposits.

Fish bones. Numerous dentary, vomer, and opercular bones of various species of marine and river fish are to be met with, along with spinous fin-rays and vertebrae. The multirayed dermal spines of the soursop fish, *Diodon*, occasionally occur, and also its enormously thickened crushing vomer and dentary. Many of the spines appear to be those of the common freshwater mullet, *Mugil*, and of the "snook," *Centropomus undecimalis*. A tuberculated spine of the "Old Wench," *Balistes retula*, Linn. was found at Stewart Castle.

Crabs' claws. These consist mainly of the terminal portions of the ambulatory legs and chelae of the common land soldier-crab, *Coenobita diogenes*, Latr., and of the black land-crab, *Gecarcinus ruricola*. The large claws of *Cardisoma guanhumi* are also abundant. All the species are very common today.

Pieces of Madreporal corals are now and again met with, but have evidently no important significance.

Ashes

The ashes at Weireka, on the Long Mountain, are arranged somewhat in layers, and are quite loose. They exactly resemble those still produced from wood fires by the peasantry near the same spot.

At Stewart Castle the entire accumulations, including the layers of ashes, are more consolidated. I am indebted to Mr. Bowrey, the Island Chemist, for making chemical analyses of the ashes. Those from Stewart Castle are bluish-grey in colour, and composed of carbonate of lime, a little iron in both the ferrous and ferric condition, a slight quantity of carbonaceous matter, and a mere trace of silica. The soluble alkalies are almost entirely removed. The mass, which becomes hard on exposure, has now practically the chemical characters of a limestone.

The ashes from Weireka are light grey, more powdery, and contain a greater amount of carbonaceous matter and soluble alkalies, sufficient of the latter being present to change the colour of litmus.

These differences between the two may be due to the former deposit being much older than the latter, or, perhaps the greater depth at Stewart Castle to which the ashes extend, and the consequent compression and [7] infiltration, may account for the variation in chemical character. In all cases where ashes have occurred, fragments of charcoal were found distributed amongst them.

Implements

Celts. From practically all the deposits odd broken or fragmentary stone implements are met with, but more particularly at Weireka and Norbrook. They are of similar type and composition to the more perfect petaloid or almond-shaped celts, so commonly found all over the island.

Mealing-stones. Portions of flattened smooth stones, much resembling the upper part of mealing-stones have been secured from Weireka. In no case has a perfect example of either the celt or the mealing-stone occurred. Evidently those met with are only the useless discarded examples thrown on to the refuse-heaps.

Flaked flints (Fig. II.). In most shell-heaps flaked flints are found. They are generally small fragments, an inch or so across, broken off some large block, but now and then a core is met with, showing where flakes have been struck off. The flint is of the same character as that occurring abundantly in the White Limestone in most districts of the island. The significance of the flakes is somewhat doubtful, as shaped flint implements are not known in Jamaica. Most probably they were used as knives or scrapers.

Shell implements (Fig. III.). From the Stewart Castle mounds two shell implements were secured, made apparently from the recent shell of *Strombus gigas*. Another has also lately been obtained from Weireka by Mr. R. N. Goodwin, and a broken one from the Botany Bay district. These are practically the only implements known in Jamaica which are made of shell; though, fashioned from the fossil *Strombus gigas*, they are extremely common in Barbados, and are not

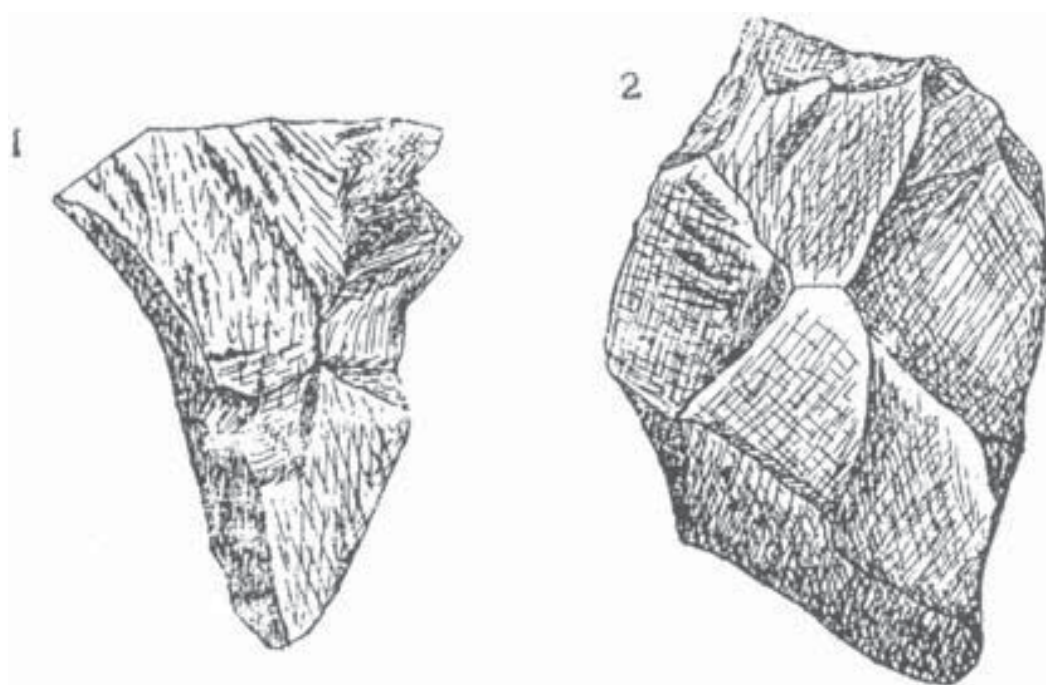


Fig. II. Flaked flints, (1) from Stewart Castle, (2) from Wales.

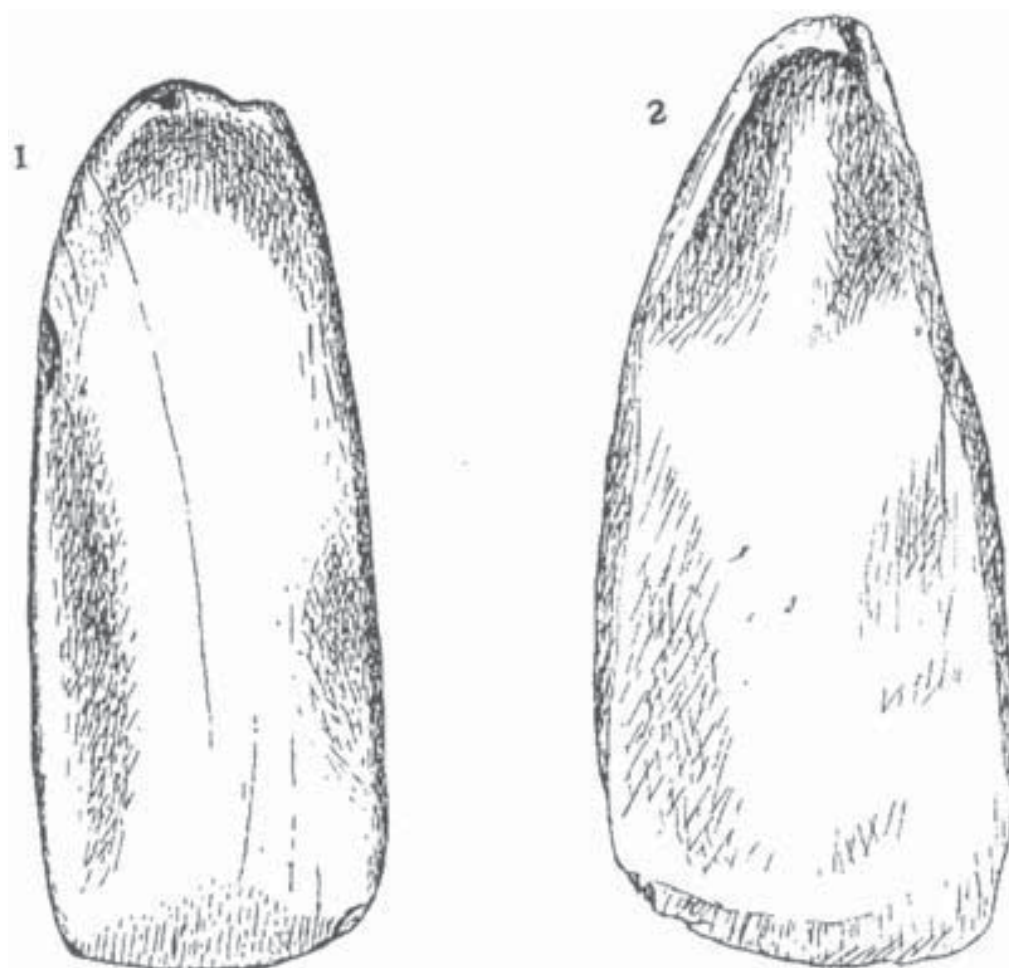


Fig. III. Shell implements, (1) from Vere, (2) from Weireka.

unknown in the other West Indian islands. Later, several fine specimens, made from fossil *Strombus* shell, have been found in Vere.

Pottery

All the pottery obtained from the accumulations is, as might be expected, fragmentary in condition, and is exactly similar in the character of its surface, material, ornamentation, and handles to the perfect vessels of various forms obtained from the many caves in the island. The cave pottery was associated with undoubted aboriginal crania and other bones.

Each locality, and more especially Norbrook, has yielded quantities of earthenware mingled with the other objects. The vessels, now only represented by these larger and small fragments, were of a circular or oval shape, mostly rounded at the base, the surface smoothed in the majority, and devoid of glazing. The clay employed was mixed with coarse fragments, mostly of siliceous minerals, and was well baked in a fire, usually becoming an earthy red in colour. The pieces vary in thickness from one-eighth of an inch to one and one-half inches, that of any [8 is Figure III] [9] one piece being however very uniform. Some of the thickest fragments are quite flat, but with slightly upturned edges, and are more suggestive of platters or cooking slabs; while fragments from Norbrook evidently represent the flattened circular base of two vessels. From Norbrook also were obtained two objects made of clay, and much resembling smoothing tools or pestles (Fig. IV., 1). Many of the specimens are blackened by fire, some still having a layer of carbon upon their outer surface. The types of handles are extremely varied, and all gradations can be traced from a simple, thumb-indented portion of clay luted on, to more elaborate handles, resembling, though very rudely, the human face. Circular perforations, made while the clay was still soft, are often found at the handles, and were evidently intended for suspending the vessel.

The ornamentation consists mostly of indented parallel straight lines or dots, either oblique, circular, or vertical in direction. The margin or rim is often thickened by an additional fillet of clay, and occasionally the fillet is used in ornamentation, forming a W-shaped wreath or festoon.

Calcedony Beads

From accumulations at Vere, in Clarendon, were obtained twenty or more perforated calcedony beads, all beautifully rounded and polished. Mr. De la Haye, who first drew attention to them, states that in the same place were also numerous pieces of partially worked stone and other incomplete beads.

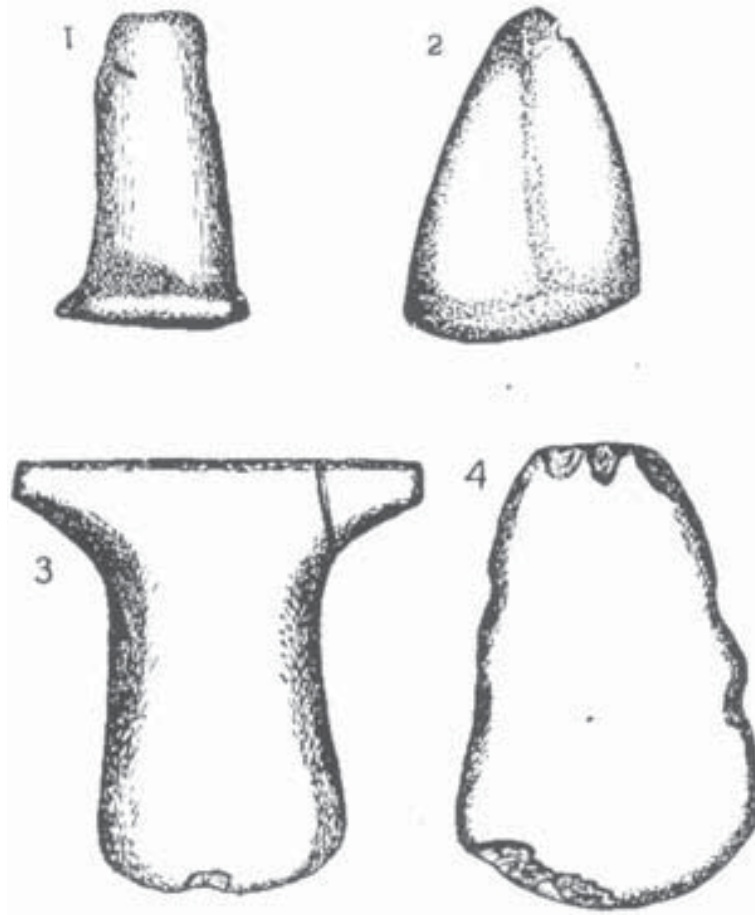


Fig. IV. 1. A smoothing tool or pestle, from Norbrook. 2. Smoothing implement. 3. Implement from Highgate. 4. Laterally grooved implement.

Amulets

Two amulets, perforated behind, and representing human heads above, but broken and incomplete below, were found amongst the extensive shell-heaps on the southern side of the Long Mountain. From the Vere deposits, Mr. De la Haye secured an image “with wings to the side, and the body and face of a man.” Owing to its being destroyed almost immediately after, no details can be given.

Objects of European Character

With the exception of a small glass phial found in the refuse-heaps at Norbrook, and neglecting the admixture of modern objects at Wales to be referred to under the description of that spot, no article at all suggestive of European influence has been obtained. The object first mentioned was found about eighteen inches below the surface. It is a small bottle (Fig. V.) about four inches in

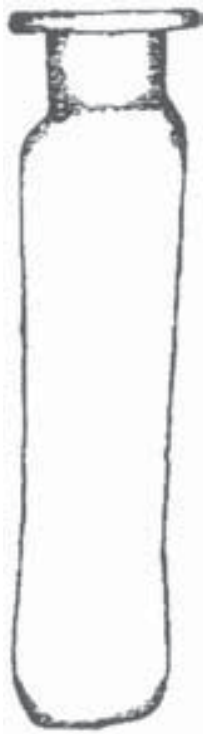


Fig. V. Modern glass phial, from Norbrook.

length, partially devitrified with age, and presenting a series of iridescent colours. Its unique occurrence may be regarded as accidental, or perhaps as indicating that European influence had reached the island while the accumulations were in progress.

Age of the Shell-Mounds

From the remarkable uniformity of the remains met with throughout the whole island, from the character of these remains, and the practical absence of all objects of a European nature, there can be no doubt that the accumulations represent the domestic refuse-heaps of the people inhabiting the island previous to, and at the time of, its discovery by Columbus. Though the species of shells met with vary with the neighbourhood, the forms and position of the perforations previously mentioned are the same in all. The fish and coney bones are alike throughout, and the broken implements are of the same type. Of greater importance is the fact that the pottery is uniform in ornamentation, handles, shape, surface, and texture, and similar to that found in the numerous caves of the island associated with skulls, bones, and other undoubted

aboriginal objects. The thickness of the deposits, extending in some cases to a depth of six feet, and the extent of the area occupied, often several acres, demonstrate that the localities must have been occupied by numbers of people and for lengthened periods. When the quantity of pottery met with in any deposit, especially in such as that at Norbrook, is considered, and how very slowly under ordinary circumstances such fragments would accumulate, one may perhaps realize how very long the particular spot must have been occupied. The remains furnish every evidence to supplement the historical accounts that Jamaica was thickly populated by the Indians at the time [10] of its discovery by Columbus; but, as is well known, the natives rapidly perished under the exactions of the Spaniards. Most competent authorities estimate the number at about 60,000 when the first Spanish settlement was commenced in 1509, and that probably few were left alive at the time of the first English invasion in 1596.

Distribution of the Aborigines

The refuse-heaps are the best indications left us of the distribution of the former inhabitants of the island, and this may most fitly be referred to here. Ow-

ing to the fact, that, previous to the present investigations, relics were mainly known from the south side, it has been supposed that this part of Jamaica was more thickly populated by the Indians than was the northern border. The extensive kitchen-midden accumulations and other evidences, such as the burial caves and rock-carvings, now known in the parishes of St. Ann, Trelawny, St. James, and Hanover, prove that this northern part of the island had, in the past, its full proportion of inhabitants.

Though up to the present shell-heaps are known only along the sea-border, proof exists, from the finding of implements and other objects, that the interior likewise was not devoid of inhabitants. Mr. D. Campbell's images, confined in a vessel, were obtained from near Ewarton, a position about midway between the north and south borders. Implements have also been collected at such an inland spot as Moneague.

Again, both eastern and western extremities have yielded antiquities, collections being known from Bath and Priestman's River on the one hand, and Negril, Green Island, and Lucea on the other. Nevertheless the fact remains that by far the bulk of the relics is found near the sea-border. By all historians—Bernaldez, Fernando Colombo, and Peter Martyr—Jamaica is reported to have been very populous at the time of its discovery in 1494. It is considered by some to have been one of the best peopled of all the Antilles (Leslie 1740). Columbus, in his first landfall of Jamaica at Santa Gloria (St. Ann's Bay?), and in his first voyage round the north side of the island from Puerto Bueno (Dry Harbour?) as far as Negril Point (Cabo del Buen Tiempo), was visited from different villages by canoes of Indians, and likewise afterwards round the south side. It is stated in the "Historie" that "all the coast was full of towns, whence the natives followed the ships in their canoes." Especially does the district around Old Harbour Bay (de las Vacas) appear to have been thickly populated, and confirmatory relics are not few. Again, when stranded, on his fourth voyage, in the neighbourhood of St. Ann's Bay, Columbus found the country around well peopled—the Indians living in villages. Lately relics have been found within sight of Don Christopher's Cove.

Food of the Indians

In the kitchen-middens we have, of course, only those indications of the food of the Indians left us which admit of natural preservation for a long time, such as bones and shells. The remains of the Indian coney are universally met with, as also the spines and bones of various species of fish, both fresh-water and marine. The turtle does not appear to have been so often eaten, fragmentary bones being found only now and again. No manatee bones have yet been revealed.

[Since this was written, Mr. R. C. MacCormack has discovered a nearly perfect rib of a manatee in one of the mounds in Vere. It was found at a depth of about eighteen inches, associated with other bones, shells, fragments of pottery, and ashes.] The numerous and varied shells are mainly marine species, and the relative proportions of each in different parts have been already indicated. *Helix acuta* and *H. jamaicensis* occur in such numbers, in association with the other examples, that their presence in the refuse-heaps can scarcely be regarded as natural, even though the former is gregarious and very abundant in the island.

The crabs' claws are mainly limited to those of the land soldier-crab and the black crab.

The numerous pieces of vessels nearly all blackened by contact with fire, the presence of ashes mingled with fragments of charcoal, and occasional burnt bones and shells are indications that they were accustomed to prepare their food with fire.

Accounts from the various Spanish writers show that, in addition to this animal food, the inhabitants of the West Indies were accustomed to cultivate maize, cassava, sweet potatoes, and that they possessed various other fruits and roots.

[11]Ling Roth (1887) quotes Benzoni's full account of the preparation in Haiti of bread made from maize and from cassava.

Shell-Mounds in Other West Indian Islands

So far as I am aware, no shell-mounds or kitchen-middens of importance have been described from the other large islands of the Antilles—Cuba, Puerto Rico, Haiti. In *Nature*, April 28, 1896, appears a letter from Dr. C. W. Branch, St. Kitts, describing objects lately found there, the details of which somewhat resemble the Jamaican relics. Dr. Branch states: "Last year in St. Kitts in a cliff fresh cut by a wash, a gentleman found what were apparently the contents of a Carib grave—fragments of pottery, two complete utensils, and pieces of human bone. . . . This is the first discovery, so far as I can ascertain, of either bones or pottery in the Leeward Islands. Since then, however, I have found a kitchen-midden, and procured plenty of small fragments, along with crab-claws, broken shells, fish bones, etc." A brief description of the bones and pottery is given, but the latter, especially in its ornamentation, apparently bears no resemblance to the Jamaican pottery.

Dr. Branch has since informed me that he has further opened the grave from which the Carib pottery was taken, and that he found the rest of the skeleton and a complete skull. The bones were, however, so altered by the action of the St. Kitts' earth that they crumbled away upon handling.

The Shell-Mounds of Guiana

Mr. im Thurn in "Among the Indians of Guiana," refers (1883, p. 410, et seq.) to shell-mounds "very similar in structure and contents to the well-known kitchen-middens of Europe. . . . all such heaps found in Guiana occur within a certain small and comparatively little-known district, north of the Pomeroon. . . .

At least eight are at present known. . . . all are in strong defensive positions, and near running water. . . . All the mounds—so far as they have been examined—are alike in character and contents. They consist chiefly of great accumulations of a small snail-like black and white shell (*Neritina lineolata*). . . .

Among the shells which constitute the bulk of the mounds, have been found various objects deserving attention. In the Cabacaboori mound, among the vast accumulation of one species of shells, but in far less abundance, were some bivalve shells (*Lucina*), a few oyster-shells and fragments of a fresh-water shell . . . together with pieces of crab-shells, bones of fish and of mammals, and lastly—and most important—human bones. These bones are invariably found scattered, and not as entire skeletons, and have been split, so as to allow the extraction of the marrow. There were also some broken, and a few entire, stone implements, hammers probably and axe-heads, pieces of charcoal, and lumps of the red pigment called faroah, with which the Indians paint their bodies. Great quantities of sharp-edged fragments of white semi-transparent quartz were also present. The shape of these and the fact that they do not occur naturally in the immediate neighbourhood, seems to suggest that they were used as implements, probably as knives, for which purpose they must have been brought from a distance. . . . In one place there were a few fragments of pottery, evidently all belonging to one vessel; these are noticeable as the only examples of pottery ever recorded as discovered in a Guiana shell-mound."

From a consideration of all the facts concerned Mr. im Thurn comes to the following conclusions with regard to the shell-mounds: "(1) that they were made not by the resident inhabitants of the country, but by strangers; (2) that these strangers came from the sea and not from further inland; and (3) that these strangers were certain Island Caribs, who afterwards took tribal form in Guiana as the so-called Caribisi, or, as I have called them, True Caribs."

Shell-Heaps or Kitchen-Middens in Other Parts of America

After referring to the kitchen-middens of Europe, Nadaillac (1885, p. 47, et seq.) thus summarizes those of America: "No less numerous are the kitchen-middens or shell-heaps in America, and wherever excavations have been made they have been most fruitful in results. Immense heaps of shells, the gradual accumulations of man, stretch along the coasts of Newfoundland, Nova Scotia,

Massachusetts, Louisiana, and Nicaragua, where deposits are described dating from the most remote antiquity. They are met with again in the Guianas, Brazil, and Patagonia; near the mouths of the Orinoco; [12] on the shores of the Gulf of Mexico; on the coasts of the Pacific, as well as on those of the Atlantic; and the shell-mounds of Tierra del Fuego and of Alaska can be made out from afar by the navigator. . . . Some of these shell-heaps are of considerable dimensions, Sir Charles Lyell describes one on St. Simon's Island at the mouth of the Altamaha River in Georgia, which covers ten acres of ground, to a depth varying from five to ten feet. It is formed also entirely of oyster-shells, and excavations have yielded hatchets, stone arrowheads, and some fragments of pottery. . . . The shell-heaps of Florida and Alabama are yet more considerable. . . .

All the shell-mounds just enumerated are situated on the shores of the sea, or in its immediate vicinity. . . .

Dr. Jones has explored forty shell-heaps on Colonel Island, Georgia. The whole island, he tells us, is covered with shell-mounds. Similar heaps, chiefly formed of the shells of oysters, clams, and mussels, are of very frequent occurrence in Maine and Massachusetts, and excavations have yielded results no less interesting. Dr. Jeffries Wyman has noted the rarity of stone implements, which are replaced by articles of bone, which are very common. Fragments of pottery are not abundant; the ornamentation, always coarse, presents little resemblance to the most ancient European pottery. The ornamentation was produced by traceries made on the soft clay either with the point of a shell, or of a sharp stone. The bones of animals are numerous."

He further refers to those of San Francisco, the shells of which one mound is made up, chiefly those of the oyster and mussel, having all been subjected to the action of fire.

From these brief references it is evident that the shell-heaps of Jamaica are of the same nature as those of the mainland, and formed by a race of people at about the same stage of development.

In the following description of the individual kitchen-middens in Jamaica, the order is mostly that of geographical distribution, not that in which they have been investigated, commencing with those on the south side (see map).

Description of the Kitchen Middens

Long Mountain.

The Long Mountain shell-mounds are situated on the top and along the southern slope of the hill, which is 1,400 feet high. The distance from the sea to the base of the hill is about half a mile, and is a flat continuation of the Liguanea Plain.

The road to the top, in its twistings and turnings, is a little over a mile in

length, the ascent being easily made in an hour. At present the way is being considerably improved for a driving road, but previously the climb must have been rugged and somewhat difficult to make.

The hill is steep on the south side facing the sea, on its northern aspect it has a gradual descent, and is more rugged, the limestone being much honey-combed in places. No caves, however, are known to occur in the immediate neighbourhood. Much further to the north are seen the higher elevations of the Blue Mountain Range. The elongated top of the Long Mountain is in places flat, and the view from it all around is one of exceptional extent and beauty. To the west can be seen the details of the Liguanea Plain, with Kingston to its southeast; beyond this, the whole extent of Kingston Harbour, the Palisadoes, and the sea and coast line for miles around.

Surrounding the residence, Weireka, recently built on the top, are to be found extensive accumulations of shells, bones, fragments of pottery, ashes, etc. Some are raised above the general surface of the ground, but others are more irregularly scattered.

On the plateau they are seen, more or less washed out at the surface, over an extent equal to about an acre. The principal mounds are immediately behind the house. A section through one showed an accumulation of light grey ashes to a depth of about eighteen inches, then a layer of brownish marl of six inches thickness, and ashes again for a few inches, before coming to the solid rock below. Shells were thickly distributed throughout. In another spot remains were found to a depth of three [13] feet, in others again to only a few inches. Many loose marine shells occur for some distance down each side of the hill, having evidently been washed from the top by the rains. Deposits have also been noted scattered over numerous spots on the less elevated portions of the mountain. The accumulations as a whole are very loose. A small pond with dirty water, found on the lower part of the north side, is, as far as could be gathered, the only source of water, the residents at Weireka have to depend for their supply upon the rain water collected from the roofs of the buildings.

Shells. The shells are characterized by an abundance of species, including a number of forms not usually met with elsewhere.

Of the Gastropods, *Strombus pugilis* is the most abundant, and many are perforated; *Nerita antillarum* and *N. versicolor*, and the brackish *Neritina virginea* are common, the latter retaining much of its original colour markings; nearly all the shells of *Pyrula melongena* have large perforations; the terrestrial *Helix acuta* is represented by numerous examples, but was evidently not so important an article of food in this locality as the var. *patina* was on the north side; *Murex pomum* and *M. brevifrons* are not rare.

The five species of ark shells, *Arca noae*, *A. occidentalis*, *A. orbignyi*, *A. deshayesi*, and *A. scapha*, are the most abundant of the bivalves. The two halves are

often still united. Aggregations of small examples of *Chama lazarus* are plentiful, with the addition of a few very large specimens, *Asaphus coccinea* is fairly abundant, as are also *Perna obliqua* and *Avicula radiata*.

A few valves of *Ostrea parasitica* and *Venus zigzag* were collected.

Mytilus exustus is not uncommon, *Modiola Americana* is rare, and only a single valve of *Pecten zigzag* was met with.

Bones. The majority are limb and girdle bones of the Indian Coney, with an occasional lower-and upper-jaw; two or three fragments of limb bones of the turtle were obtained, and fish spines, vertebrae, dentary and opercular bones. *Crabs' claws.* These consist mainly of the terminal joints of the ambulatory legs and chelae of *Cardisoma guanhumi*, and of the common black land-crab, *Gecarcinus ruricola*. Several fragments of various species of Madreporal corals occurred. *Pottery.* The pottery resembles that obtained from other refuse-heaps. It is made of a very coarse clay with large particles of siliceous matter; not much lime is demonstrated by testing with acid. Some thick, flattened pieces are more suggestive of large platters than of vessels. *Implements.* Many broken celts of the usual type were obtained, either from amongst the rubbish or washed out from the earth a little down the incline; also several broken parts of upper mealing-stones, irregular broken pieces of flint, and an implement with ground edges formed from the shell of *Strombus gigas*, and resembling the Barbadian specimens.

Amulets. Two imperfect images of greyish marble, perforated behind for suspension, were obtained many years ago by Mr. C. P. O'R. de Montagnac from the ground around Rennock Lodge, about 400 feet up Long Mountain. They were associated with accumulations of shells and pottery, which must be considered a continuation of the Weireka refuse-heaps. The two amulets are described later.

Botany Bay.

While examining the ground around the Botany Bay and Cambridge Hill caves, each of which contains abundant aboriginal remains, examples of marine shells similar to those on the Long Mountain were met with in different places, associated with a few pieces of pottery. The elevations command a good view of the sea, about two miles distant. The accumulations, so far as observed, are not abundant, though further search would probably reveal more. A broken shell implement was picked up in traversing the very rocky district, and two or three other implements were obtained from the peasantry.

Norbrook.

The investigation of this deposit, the first carried out with any degree of thoroughness, was undertaken by a Committee of the Board of the Institute of Jamaica, in 1890. An article on the subject by Lady Blake, appears in the "Vic-

toria Quarterly" (1890) of the same year. The Committee's collections were deposited in the Museum. The following details are abstracted from the paper referred to: The kitchen-midden occurs about six miles from Kingston, on a little table-land sloping down to the [14] Liguanea Plain with the Port Royal Mountains behind and a lovely view of the sea in front. Close at hand rises a clear and ever running spring of water. "To the east the field is abruptly terminated by a sudden dip and a bank of some 16 or 18 feet in height. In digging into this bank layer upon layer of shells are to be found, mingled with pottery more or less broken, a few small bones, and now and then a stone hatchet. Here and there some of the shells show traces of fire.

The pottery is of different degrees of thickness, some of it a rather finer texture than the generality of the fragments, and we found a few bits that bore traces of a slight attempt at ornamentation."

Bones. Most of the bones deposited in the Museum are those of the limbs and pelvic girdle of the coney, together with an occasional upper and lower-jaw. Some are blackened throughout, having been burnt in a fire. A number of spines and vertebrae of fish, and a few fragments of turtle bones occur.

Shells. The shells are much like those obtained from the Long Mountain deposits, and many are perforated. *Pyrula melongena*, *Turbo pica*, *Murex brevifrons*, and two or three species of *Arca* constitute the majority; while *Ostrea parasitica*, *Strombus pugilis*, and *Chama lazarus* are represented by many specimens. Occasional pieces of coral are met with, as in all the other accumulations.

Pottery. Hundreds of fragments of pottery of various sizes were collected from the small section of the kitchen-midden examined. The earthenware forms a large proportion of the accumulations, exhibiting only small differences in character. Much variation exists however in the numerous handles, along two or three distinct lines of modification. Some of the examples rudely represent faces. Most of the pieces are partially blackened by use.

Implements. As mentioned in the account already published, broken stone implements are met with. Those in the Museum are of similar type to the ordinary petaloid examples found everywhere in the island. A number of flaked flints and a chipped core correspond with examples from the other refuse-heaps.

Flaked flints were first discovered here in Jamaica, attention being drawn to them by Dr. Plaxton, one of the Committee charged with the investigation.

European objects. The phial represented in Fig. V., p. 9, is evidently of European origin. It was found in the deposit at a depth of 18 inches. It is nearly four inches in length, green in colour, and partially devitrified with age.

Hope.

The remains at Hope are on a slight elevation in a rather secluded spot in the vicinity of the old Tavern, with the Hope River running near. They are at a distance of about five miles from the nearest point in Kingston Harbour.

The surface of the ground exhibits numerous weathered marine shells, such as those of *Strombus*, *Pyrula*, and *Arca*, mingled, in a black earth, with fragments of pottery.

A cursory examination of the spot indicates a facies much like that of Norbrook or the Long Mountain.

Caymanas.

These refuse-heaps were known to the late Hon. Richard Hill, one of Jamaica's early naturalists. They were further brought to notice by Mr. H. Vendryes. From Hill's manuscript notes for a series of lectures upon the Indians of the West Indies, now in the possession of Mr. L. Hutchings, the following is extracted in reference to these deposits in particular, and also to the general habits of the Indians and the construction of their villages: "We have already adverted to the circumstances under which those that inhabited the West Indian Islands wasted, and waned, and perished out, leaving scarcely any vestige of how they had lived, or where they had lived, beyond the heaps of shells and broken pottery where their villages had stood. Let us describe the remains of an Indian village, accessible to anyone curious in these researches, and not far away from Kingston. At the Marl Hill, descending into the plain of Caymanas, the highway cuts through the remains of an Indian village. Broken pottery with a quantity of shells of both land and marine molluscs embedded in ashes reveal this vestige of the ancient people of the island. In looking into these heaps—minutely examining the materials that strew the hill slope to discover bones of vertebrates—I found portions of human skeletons, portions of two skulls and parts of arm bones and a shoulder blade. The Indians removed their dead from their dwellings, and buried them, or deposited them in caverns at some distance away. In these remote places their remains are still to be found with specimens of their [15] pottery. The human vestiges at the Marl Hill, with traces of their ancient dwelling places, their food, and their hearth fires, would imply that the village had been destroyed by violence and that these are bones of persons who had died in conflict.

Indian villages were always erected on hillsides in the neighbourhood of streams of water. In past times the Rio Cobre swept at the foot of this hill, and wound at the base of the mountains, through the lagoon, and descended to the sea, by the Fresh River. The storm of 1722 divided the Cobre from its channel, and opened for it a more direct course into the harbour.

We may picture what this Indian village was at the time of the discovery. The plain round which the river swept was a series of fields and gardens, producing their staff food, the yam, the maize, and manioc, beans, cucumbers, and melons—with such fruits as the Cainite or Star-apple. They wound cotton for cordage, or twined into yarn, which they wove into vestments for women. If

they had any domesticated bird it was the turkey and the Muysca duck. They trapped the Coney—the *Capromys*; and the only quadruped they possessed in a state of domestication was their little household pet, the small dog they called the *Alco* (Dn. Ferdinand Columbus, *Hist. Dis. Am.* Pt. II., lib. II., ch. 1).

Their cottages were built of stockade posts set vertically side by side in a trench, and bound with a horizontal lattice of slight rods. This primitive style of building still prevails in some of our country cottages. . . . The Indians of these Islands, like their cognate tribe the Arawaks of the coast, depended on the sea for food.

Though the Marl Hill village was situated on a stream plentiful in fish at all seasons, their messes, if we may judge from the exceeding prevalence of sea-shells, were very considerably dependent on the ocean. The traditional fish-feasts, so frequently indulged in by the older colonists, were the associate festivities called Barbacoes by the Indians, when the entire villagery went out on marine and river excursions. In Don Ferdinand Columbus's *History of the Discovery* voyages of his father, he mentions that some high raised islets on the coast of Cuba under which the discovery vessels anchored had been places visited by the Indians in these seasonal barbacoes. It appeared, he says, that the people were in use to go over in great numbers in their canoes to these islands, and to a great number of other uninhabited islets in these seas to live upon fish, which they catch in great abundance, and upon birds, crabs, and other things, which they find on the land. The Indians, he adds, follow this employment of fishing and bird catching according to the seasons, sometimes in one island, sometimes in another, as a person changes his diet, when weary of living on one kind of food."

Vere, Clarendon.

In the year 1880, Mr. De la Haye discovered on the lands at Harmony Hall, District of Vere, Clarendon, while making holes for the planting of canes, a number of calcedony beads, a perforated spindle-shaped stone, and numerous pieces of ornamental pottery. Along with these was also found an image which Mr. De la Haye describes as "only the breast with wings to the sides, and the body and face of a man." Unfortunately this most important object was broken, and nothing more is known of it.

The Hon. W. Fawcett visited the place later, and found additional objects similar to those previously obtained. These are now located within the Museum.

The entry in the Museum book referring to the presentation of the perforated stone is as follows: "An oval-shaped stone, probably a line-sinker, presented by A. De la Haye, Esq., found by him in Clarendon, on the site of what he believes to be a deserted village. At the same place Mr. De la Haye found

beads made of a kind of marble; an image of burnt clay, the face of a man with wings. Coral, oyster shells, and pieces of pottery are thickly strewn about the ground.”

The calcedony beads are described and figured further on.

The pieces of ornamental pottery are a little different in the character of their handles from those obtained elsewhere, and appear better burnt.

From information supplied later it appears that the pottery, beads, etc., were found scattered about and turned up in digging cane holes on a spot distant about a third of a mile from the sea at West Harbour Creek. Mr. De la Haye believes there were two Indian families living at a distance of about a quarter of a mile apart, and that one carried on the trade of bead making and pottery, the other pottery alone; the reason given being that half hewn bits of stones, half finished beads, pieces of un-[16]burnt pottery, and an immense quantity of unfinished utensils were found in one place, while broken pottery alone was met with in the other. An abundance of marine shells of all descriptions—oysters, conchs—are scattered about both places, and are similar to those still living at West Harbour and Bogue Creeks. From this account, further supported by the specimens at the Museum, there seems no doubt that we have in Vere refuse-heaps of the aborigines, similar to those more systematically investigated elsewhere.

Hanover.

This parish is at the extreme north western part of the island. Mr. A. Bancroft has contributed accounts of the occurrence of quantities of marine shells, associated with fragments of pottery, from various spots. Specimens from Haughton Hall Estate, at Green Island Harbour, and from Newfound River, near by, are of the same character as those obtained from mounds in other parts. One heap he describes as having an extent of two or three square chains, the objects being met with for a depth of one or two feet, commencing about a foot below the surface. Mr. Bancroft records having obtained similar evidences from Rhodes Hall Estate in the same district, and more northerly at Kew Estate, near Lucea East River.

Williamsfield.

Mr. Edward Foster has forwarded to the Museum a collection of objects obtained from Williamsfield, St. James. It includes pieces of pottery, several broken stone implements, numerous valves of *Codakia tigerina*, and shells of *Turbo pica*, *Helix acuta*, and *H. Jamaicensis*, all indicative of a kitchen-midden deposit. Later, Mr. Foster has supplied the following details: The accumulations occur on the top of a hill on the right bank of the Orange River, a tributary of the Montego River, at a distance of about five miles from the sea in a direct line,

and seven and a half by road. Several springs around are connected with the river. The deposit of shells extends over an area of about fifteen chains around the hill, by an average of one and a half chains wide, and is eighteen to twenty inches deep in places.

Kempshot, where the cave containing aboriginal carvings occurs, is three or four miles distant.

Tryall.

Mr. R. J. Taylor Domville, formerly of Running Gut Estate, and now of King's Valley, in a communication to the Hon. W. Fawcett, referred to the fact that in digging cane holes in certain places on the Tryall Estate no end of broken pieces of jars, shells, and now and then a stone axe, were to be found. Mr. Fawcett forwarded the letter to the Museum, suggesting that the matter might be worthy of investigation. Later, Mr. Domville was able to supply further details with regard to such accumulations on two distinct hills on the estate—Mammee Hill and Spotty Hill. Researches now carried out demonstrate that at Tryall, and the surrounding estates, there must have been important Indian settlements. Relics have been found, to a depth of two or three feet, extending over a number of acres of ground; while a cave has been discovered at California, containing heaps of broken pottery and many portions of human skulls and other bones.

Tryall Estate is situated in St. James, a little off the main road, at about nine miles from Montego Bay. It adjoins the Running Gut Estate, and is now owned by Mr. Edgar Turnbull, and under the management of Mr. Melville, the latter of whom rendered very considerable assistance in the work. The country around is formed of the White Limestone and, from the sea, exhibits one or more terraces of rounded hills or downs, from fifty to a hundred feet high, backed by a higher series of hills. It is on the former, overlooking the flat erosion plain which extends to the sea, that the Indians appear to have erected their settlements in this parish.

Mammee Hill. This hill consists of two flat terraces rising one above the other, and sloping upwards to the high elevations which constitute the greater part of the interior. Deposits are found scattered over an area of four or five acres; this being the most extensive accumulation yet met with. They are most plentiful along the margins of the plateau, and consist of shells, pottery, bones, and pieces of flint similar to those obtained in other mounds. The marine bivalves *Codakia (Lucina) tigerina* and *Tellina fausta* are especially abundant. In one spot about a dozen examples of *Perna obliqua* were obtained, a species more characteristic of the accumulations on the south side, and no doubt regarded as a [17] special delicacy. Exposed fragments of shells are to be seen over all the surface of the ground. A bridle path cut round a portion of the hill first displayed to Mr. Domville the abundance of foreign objects. Here, as in other

mounds, the superficial soil in which the remains are embedded is rich, and very dark in colour, contrasting strongly with the yellowish marl below and the lighter coloured earth near by where no shells are met with. The occurrence of an iron nail, met with in digging, must be regarded as merely accidental.

Spotty Hill. On Spotty Hill, which is about a mile from the sea, the deposits are much disturbed and scattered, as a result of the ground being planted with canes, coconut palms, and guinea-grass; and also by the great wash which occurs during the heavy rains. The shells and pottery are found to a depth of two or three inches below the surface, and extend over an area of an acre or two. One of the best spots occurred at the dividing line between the piece in commons and the cane-piece. Here remains were obtained to a depth of over twelve inches. A portion of an aboriginal stone implement, formed of polished greenstone, was found amongst the objects. With this exception the relics are the same in character as in the mounds previously described.

California.

Enquiry of various labourers elicited the fact that, in digging, marine shells were to be met with at Sheep Pen Pasture on the California Estate, adjoining Tryall, Running Gut, and Rose Hall estates. In company with the proprietor, Mr. Frank Robertson, and the Attorney, Mr. J. Shore, excavations were conducted there. Over an extent of three or four acres small fragments of land and marine shells could be seen at the surface, and digging at any spot revealed more perfect ones, associated with pieces of pottery, bones, and spines of fish, to a depth of from two to three feet.

The three localities, Mammee Hill, Spotty Hill, and Sheep Pen Pasture, are all in sight of one another, and within a radius of a mile or two. The character of the accumulations in all the mounds is exactly the same, their extent demonstrating that the district must have been a populous one in the days of the Indians.

“Thunderbolts” are plentiful today in the possession of the workers on the estates around.

Wales.

These accumulations are situated behind the residence on the property of Mr. J. H. Clerk, at Wales, Trelawny, occurring on one of a series of hills surrounding a rich and fertile plain. The hill inclines steeply to the south and east, most gradually to the north and west. The presence of these circles of hills, enclosing plains of greater or less extent, is one of the features of the parish of Trelawny, where it surrounds the Cockpit Country. At present part of the ground where the remains are found is planted with coconut palms.

The investigations were instituted as a result of Mr. A. Townend’s attention

being directed to a spot by the presence of numbers of marine bivalves found exposed at the surface. Mr. Clerk allowed excavations to be made in order to determine the nature and extent of the deposit. About twenty different parts were examined.

The soil in most places is loose and mingled with stones of various sizes. The shells are confined to the south-west declivity and are mainly superficial, but at some few spots are found to a depth of two feet. They are scattered about promiscuously. The following species were obtained: *Helix acuta*, var. *patina*, *H. jamaicensis*, *Strombus gigas*, *Pyrula melongena*, *Purpura patula*, *Turbo pica*, *Luccina tigrina*, *Mytilus exustus*, and *Ampullaria fasciata*.

The first two are terrestrial and by far the most abundant. *Ampullaria fasciata* is a fresh water gastropod, while the others are marine shells. They are all common species found living in the surrounding district, or in the sea, which latter is distant about five miles.

Many of the flattened shells of *Helix acuta* have the upper part, for about two and a half whorls, broken off; apparently this has no artificial significance, as specimens were obtained *in situ* with the portion in process of separation. Many have, however, the large irregular artificial perforation behind the mouth of the shell. Mingled with the shells were found fragmentary pieces of coarse, unglazed earthenware with occasional indented ornamentation. A bone of the Indian coney, a few fish bones, and pieces of broken flints were obtained; but the accumulations are not by any means extensive. Confusion was produced in places by the finding of objects indicative of very modern European occupation, such as broken pieces of glazed and painted pottery, glass, iron-nails, and stems of pipes. It was [18] ascertained that the situation had been used during slavery times as the Negro village. Foundations of the houses are still to be seen on the top of the hill, and elsewhere their places of burial.

From a comparison of the shells, bones, and pottery obtained with those from other places, not associated with any modern remains, we are evidently warranted in considering the deposits at Wales as relics of an Indian occupation, disturbed in later times by the residence of the Negro slaves belonging to the property, at that time a sugar estate.

Stewart Castle.

The Stewart Castle mounds, six in number, are situated on a slight rising of the ground along the border of a plain surrounded by picturesque hills. The selection of this spot by the Indians, as a residence, is more characterized by its beautiful surroundings than by any protective feature. The locality is about one and a half miles from the sea, and the particular enclosure where the accumulations occur is known, even today, as "Indian Town." The property, which belongs to Dr. Dewar, was formerly a sugar estate, and the mounds, though now covered

with a rich soil supporting guinea-grass, have evidently never been more than superficially disturbed since their formation. Even from some distance the peculiar mound character of the spot is obvious, quite distinguishing it from the surrounding country. The shells in each heap commence near the surface, mingling with the soil around the roots of the grass. Excavations were conducted at all the elevations, and yielded much the same results, except that the objects were found to extend to variable depths. One mound is more central, larger, and slightly higher than the rest, which vary in size and are arranged somewhat in the form of an incomplete circle (Fig. VI.). In the principal mound digging was continued to a depth of six feet; remains being met with for five feet. In others they extended to a depth of four feet, or for only two or three feet. The objects were scattered somewhat uniformly throughout the earth, along with many loose limestone blocks.

Evidences of arrangement in layers were not wanting, especially in the largest mound. The upper soil everywhere is dark, but passes into a lower, light coloured, marly layer. In no case was the solid rock reached, though in an adjoining higher pasture this was quite superficial. Dr. Dewar was led to suggest that the place ought to be investigated from the fact that the ground here is much looser than elsewhere, often causing his horse to stumble when riding over it. The deposits, with the elevation upon which they are situated, occupy an area of three or four acres. Excavations were also carried out in the depressions between the mounds, but only stray shells were to be found.

In section the principal mound exhibits different layers of material, demonstrating the manner in which it has been built up. At a depth of two and a half feet in one particular spot, four distinct strata of fine, greyish-blue ashes, with alternating layers of burnt earth and soil, were to be seen. The layers of ash, each about three inches in thickness, are now partially consolidated, but become more so on exposure, and mingled with the ash are small fragments of unburnt carbon. The layers indicate that the wood fires of the aborigines must have burnt for a considerable length of time on the same spot; then, for a period, the place became covered with earth; other fires were made on the top of this, and so on for the several successions indicated. Few shells were found in the intermediate strata of burnt earth and soil.

The extent of the area covered, and the thickness and quantity of the various deposits prove that the locality must have been frequented for long and various periods by numbers of the aboriginal Indians. The [19] objects detailed below, show the kinds of food (so far as concerns those which possess parts capable of preservation) they fed upon; while the ashes and blackened pottery prove that they were accustomed to prepare their food by cooking.

Bones. The majority of bones are those of various species of fish. Numerous spines, including one of the body spines of the sour-sop fish, vertebrae, and fa-

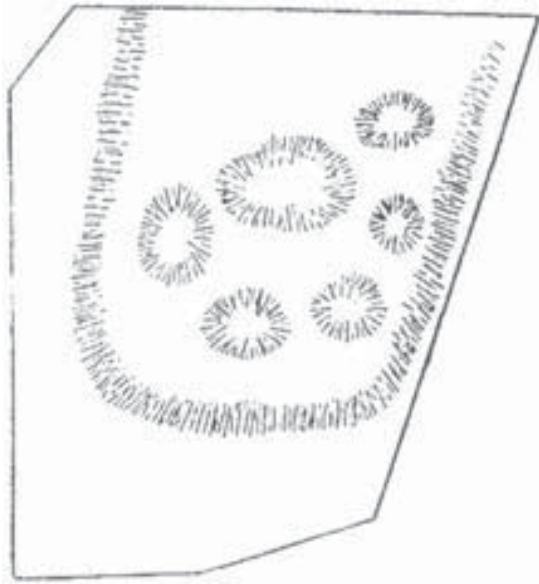


Fig. VI. Sketch plan of the mounds at Stewart Castle. Area: 7 acres, 3 roods.

cial bones occur. A few long bones and jaw bones of the Indian coney were found.

Shells. The shells form, by far, the principal objects met with. The common land snail, *Helix acuta*, var. *patina*, is the most numerous, and, along with the bivalve, *Lucina tigrina*, and less so the small mussel, *Mytilus exustus*, determines the characteristics of these accumulations. The *Helix* is found of all sizes, the majority having the irregular perforation on the upper side of the last whorl, about half an inch from the shell mouth. *Pyrula melongena*, *Strombus gigas*, *Turbo pica*, and *Helix jamaicensis* are

occasionally present, and still more rarely species of *Purpura*, *Fissurella*, *Chiton*, and *Neritina*.

Several claws of crabs, mostly those of the land soldier-crab, *Coenobita diogenes*, were collected also two pieces of Madreporal coral.

Pottery. Numerous broken fragments of coarse earthenware were distributed throughout, with characters differing in no respect from the undoubted aboriginal pottery obtained from the various caves, and now known from numerous other parts of the island. The pieces are of various thicknesses, and include a few of the simple types of handles.

Implements. Irregular, flaked flints occur mixed with the loose earth and the small boulders of limestone; none, however, showed further traces of workmanship. Two shell implements, one rather gouge-like and the other resembling in shape a curved knife blade, are of special importance, as being, at the time, apparently the first aboriginal implements of shell described from Jamaica. They are made from the shell of the great conch, *Strombus gigas*.

Retreat.

These deposits are on the property Retreat, situated between Brown's Town and Stewart Town, in St. Ann, about four miles from the former. The land is now owned by Mr. Roper, but was formerly in the possession of Mr. Moulton Barrett. Miss Moulton Barrett made a number of investigations at the place, and lent to the Anthropological Exhibition a collection of fragments of pottery obtained.

With regard to the occurrence of these Miss Barrett writes as follows: "The

pottery was found on a ridge of land connecting two hills; the higher of the two commanding a very extensive view of a part of St. Ann, a great part of Trelawny, and a long stretch of coast. The ridge in question is covered with small mounds, all of which contain fragments of pottery, broken shells, and bones of the Indian coney, and I found there too a solitary piece of sea coral. The pottery was quite on the surface of the ground, and there was none below two or three feet." The pieces of pottery, which were the only objects from the spot sent to the Museum, are all of the same type as the examples now obtained in such abundance elsewhere.

The hill or ridge upon which the kitchen-middens are found is about 1,200 feet high and six miles from the sea. It forms one of a series very abundant in this part of St. Ann and Trelawny. The White Limestone weathers into rounded elevations, the material of the intervening valleys being removed mainly in solution. The view from them is one of remarkable beauty, embracing richly wooded and cultivated hills and vales on each side, higher hills behind, and a long stretch of coast and sea to the north, with Cuba in the distance, to be seen under favourable conditions. The elevation in question was very significantly known by the former owners as "Cacique's Ridge," and is also known as Little Nigger-ground Hill, while a higher one near has the title of Big Nigger-ground Hill. These latter names recall the fact that in slavery days the particular spots were used by the Negroes as provision grounds; they being allowed to cultivate them for their own benefit on Sundays and holidays. The mounds are now rather irregular in shape, probably owing to the hill being formerly cultivated, and scattered remains are found to extend over an acre or more. Excavations were made at numerous spots, and, in all, scattered amongst the upper dark loose earth and fragments of limestone, were broken pieces of pottery, quantities of land shells, a few specimens of marine shells, and bones of the Indian coney and of various fish. This foreign material extended in several places to a [20] depth of two feet. In one a deposit of partially indurated bluish-grey ash and charcoal gave evidence of the use of fire by the builders of the refuse-heaps. The land shells obtained were principally *Helix acuta* and *H. jamaicensis*; the marine shells *Turbo pica*, *Strombus gigas*, and one or two examples of the bivalves, *Codakia (Lucina) tigerina* and *Tellina fausta*. In regard to the general facies of the accumulations, the present mounds do not differ from the neighbouring ones at Stewart Castle and Wales. The marine shells are proportionately much less in number, a fact which may perhaps be accounted for by the greater distance of the locality from the sea; again, none of the land shells collected has the artificial perforation behind the mouth, such as was found in those from Stewart Castle and from Wales.

Mr. Roper gave permission and assistance for carrying out the excavations.

Cranbrook.

Cranbrook is a property on the northern border of St. Ann, situated about a mile from the sea, and within view of the celebrated Don Christopher's Cove. It was at this latter place, in June 1503, that Columbus, on his fourth voyage, is supposed to have stranded his two unseaworthy caravels, and later found the surrounding districts well populated with Indians, who supplied him with food during his stay of over a year in the neighbourhood. Mendez, one of the followers of Columbus, mentions several villages and caciques with whom he arranged for regular supplies of food, such as cassava and fish. He speaks of Aguacadiba as the name of the first village he came to when he went out from the vessels to seek for supplies. Further on, about 13 leagues from where the ships lay, he "came to a great cacique named Huareo, living in a place which is now called Melilla" (Journ. Instit. Jam., Vol. II., p. 41). The same writer also refers to the presence of natives towards the eastern end of the island. He was taken prisoner on two occasions by these, speaking of them as Indian pirates, and was in danger of losing his life.

It is interesting therefore to learn that Mr. A. Townend was able to announce while the preparation of this report was in progress, the discovery of Indian relics near this historical spot. Concerning them he supplies the following details: "A general examination shows a number of the usual shell-mounds containing an abundance of shells, broken pottery and flint chips. On the north west, and within 200 yards of the Llandoverly river, is a large semicircular mound, digging into which yielded at once the remains of what appeared to be an earthenware bowl containing human bones and a skull all in fragments. Another spot also yielded a similar vessel with human bones. At a distance of about three feet from the surface a large deposit of wood ashes, looking as if quite recent, was met with. Elsewhere another collection of fragmentary bones was found. The bones were examined by Dr. Ormsby who regards them as having belonged to young individuals, probably under twenty years of age. They are too incomplete to allow of the determination of other characters."

Mr. Townend forwarded some of the fragments of pottery to the Museum. They are similar to those obtained from the other refuse-heaps and from the caves, except that the handles are rather more ornamental (Fig. X., p. 40).

Friendship.

Information has been received of the occurrence of marine shells and broken pottery, indicative of a kitchen-midden on the property Friendship in St. Ann, belonging to the Hon. S. C. Burke, but no investigations have yet been carried out.

Belle Vue.

On the side of a road cutting through Belle Vue, on the northern border of St. Ann, Dr. Plaxton discovered an accumulation of shells associated with fragments of coarse pottery. These were presented to the Museum and suggest the desirability of a further examination of the spot.

[21]
CHAPTER II
BURIAL CAVES

Owing to the numerous natural caves in Jamaica, the method of burial practiced by its aborigines appears to have been different from that generally followed by the various native tribes on the American continent. Amongst these, the more usual course evidently was to bury their dead in specially constructed mounds, "Sepulchral mounds being met with throughout the United States" (Nadaillac). The so-called White and Yellow Limestone of Jamaica, considered to be of Tertiary age, occupies about five-eighths of the surface of the island; and caves, sink-holes, and underground passages are common in many districts. The floors of most of these contain only phosphatic deposits, mainly derived from the faeces of innumerable bats and the decomposition of the limestone. Others, however, have been known for a long time, and are even yet occasionally being discovered, which contain quantities of skulls and other human bones, examples of coarse earthenware vessels, with now and again other objects of archaeological interest. Rarely have the refuse-heaps yielded any human bones, the two exceptions being those at Cranbrook and Caymanas. Beyond these, bones of the aborigines have not been found otherwise than in caves. During recent excavations in various parts of Kingston, and in some few other places, human bones have been met with, either Negro or European. In the caves known for a long time the relics have suffered by depredations on various occasions, and most of the objects have been destroyed or distributed beyond the island. It is to be regretted that in no instance have we an account of any cave which can be undoubtedly regarded as being in the original condition in which it was left by the Indians at least two or three hundred years ago. Probably nearly all have been visited and so disturbed by the later inhabitants—European and Negro—at one time and another, that in no case can much reliance be placed upon the present position or arrangements of the objects. The Halberstadt cave, when discovered last year, showed least indication of having been tampered with. The entrance was closed by loose boulders, and the Rev.

W. W. Rumsey, who first opened it, states that the skulls and other parts of the skeletons were arranged somewhat in a row under the pieces of a canoe. An old resident at Botany Bay affirms that when he first saw the cave there, the skulls were placed side by side. Beyond this, there is no trustworthy account of any orderly arrangement of the skeletons or pottery in the caves. In those recently examined, the bones and pottery were promiscuously scattered on the surface of the floor and ledges, or were partially or completely buried in the debris of cave earth and stones. No evidence is forthcoming to show that the bones were purposely covered with earth or stones. Many are more or less broken or decayed; others again, especially those from Halberstadt, are very perfect.

In no case is there any appearance of artificial construction connected with the formation of the caves; the roof and sides have often stalactitic matter upon them. The aperture of the Halberstadt cave, as already mentioned, was closed with boulders when first discovered, and numerous similar stones generally found around the mouth of the others may indicate that it was the custom of the natives to protect their dead in this way. The distribution of the burial caves is practically the same as that of the kitchen-middens, i.e., around the borders of the island (see map). The limestone in which the caves occur is usually so weathered as to give a rugged character to the districts.

A small variety of objects, such as shells, shell-beads, and bones of other animals, has been found in addition to the human bones and pottery.

Human Bones

Bones of all parts of the skeleton, and representing both sexes and all ages, have been obtained. Many are in a good state of preservation, but those embedded in damp cave earth are considerably decayed. The Halberstadt cave has, in recent times, yielded the most extensive series, one or more components of the skeleton of at least thirty-[22]four individuals being represented, including a number of crania. The Richmond Hill and Botany Bay caves contained many complete skulls and other bones.

The important and obvious features distinguishing most of the cave skulls from those of Europeans or Negroes are the flattened frontal region and the marked brachycephalic form; the latter exaggerated no doubt by the process involved in the former. Not all the skulls, however, exhibit this artificial deformation of the sinciput to a marked degree.

Practically all the osteological remains recently obtained have been handed over to Prof. A. C. Haddon for complete report.

About half of those from the Halberstadt cave were, some time ago, forwarded to Sir William H. Flower, and were exhibited by him before the British

Association at its meeting at Ipswich, in 1895. A preliminary account was contributed to *Nature*, October 17, 1895. Concerning eight skulls submitted, we have the following remarks:

“Of the adult skulls, three appear to be masculine and three feminine in type. Five of these show evidence of artificial depression of the frontal region in various degrees. In two it is very marked, in the others less so. In the sixth, though the frontal region is low, no effects of artificial deformation are evident. Both the children’s skulls are very broad and flat, but whether naturally so, or whether this character has been exaggerated artificially, it is difficult to say. The mode of depression, when it occurs, is similar in all, evidently produced by the flat board upon the forehead—the commonest custom throughout so large a portion of the ancient inhabitants of the American continent. Although there is a considerable general resemblance between these skulls, they present strong individual characters, but their whole aspect, taken together, is characteristic of the American type.

The retreating forehead, well marked supraciliary ridges, round broad arch of the palate, round high orbits, narrow nasal aperture, and especially the narrow, prominent nasal bones, causing a high bridge of the nose during life, are very characteristic. There are, however, two rather remarkable exceptions to this form of nose, in which the breadth of the aperture and flatness of the nasal bones almost recall those of the Negro, the nasal index being as high, respectively, as 542 and 563. These are both feminine-looking heads, and one of them is the most and the other the least deformed of the set. Whether this form of nose is met with in any other undoubtedly aboriginal American crania, is subject for investigation. Apart from these, the skulls are remarkably like the majority of those which I have seen of Peruvians, Mexicans, and the ancient moundbuilders of the United States.”

In 1890 Sir William H. Flower read a paper before the Anthropological Institute upon two skulls—one Indian, the other Negro—obtained in Jamaica from the Pedro Bluff caves. With regard to the former, he says:

“The cranium, of which I shall speak first, is of great interest, as it is undoubtedly that of one of the aboriginal races of America, and therefore in all probability one of the long vanquished people who inhabited the island of Jamaica before the European conquest, and of whom we have such scanty traces remaining. . . . The cranium has been artificially deformed during infancy in a very marked degree, according to the fashion most frequent along the whole of the West coast of America, i.e., by depression of the frontal region, or fronto-occipital compression, with corresponding lateral expansion. This form of deformation is known to have been practiced among the inhabitants of the West Indian Islands. In all essential features, the skull is purely American; indeed I see no characters by which it could be distinguished from one of those, now

so abundant in collections, obtained from the old burying grounds on the sea-coast of Peru."

Seeing that the skulls obtained from all the caves exhibit characters similar to these already described, no doubt exists that the cave remains met with throughout the island are those of the Indians of the discovery. This receives further confirmation from the conditions under which the bones are obtained, and the objects, especially the pottery, associated with them.

[23]

Note on the Craniology of the Aborigines of Jamaica

[For explanation of accompanying Plate Ia, see List of Illustrations.]

By Professor A. C. Haddon, M.A., D.Sc.

A collection of some sixteen crania and numerous fragments of skulls and lower jaws, together with a vast number of bones of the axial and appendicular skeleton were forwarded to me by my friend and late colleague, Mr. J. E. Duerden.

Various circumstances have prevented me from expeditiously working through this mass of valuable anthropological material of an extinct and hitherto unstudied people. I therefore invited my former pupil, Mr. B. N. Tebbs, of Queen's College, Cambridge, to assist me in this study; unfortunately his time has also been much occupied. We have, however, made considerable progress, and we hope before long to publish our joint memoir on the Jamaican aborigine.

In the present communication, I submit the main craniological characters of this people. The descriptions of the crania and the detailed measurements, as well as remarks on the bones of the skeleton, will be published in the complete and, I hope, illustrated memoir. The craniological remains must have belonged to at least three dozen individuals.

There is a good deal of variation in certain details among the skulls, but I am not at present in a position to say that this indicates an ethnic mixture.

Probably all the skulls have been subjected to artificial deformation, in a few instances this has been but slight, whereas in others it is very marked. The general effect of the deformation has been to flatten the lower portion of the frontal bone; but along the anterior margin of the coronal suture there is a slight swelling which, in front of the bregma, often expands into a broad triangular area, the apex of which passes mesially forwards and may extend to the level of the frontal eminences; the latter may be moderately developed to scarcely apparent. Behind the coronal suture, and along the anterior border of the parietals, is a moderately broad, shallow depression, thus producing a form of clinoccephaly; this annular depression is often interrupted in the sagittal line by a very slight median keel. The parietal eminences are fairly prominent, but they

Plate Ia

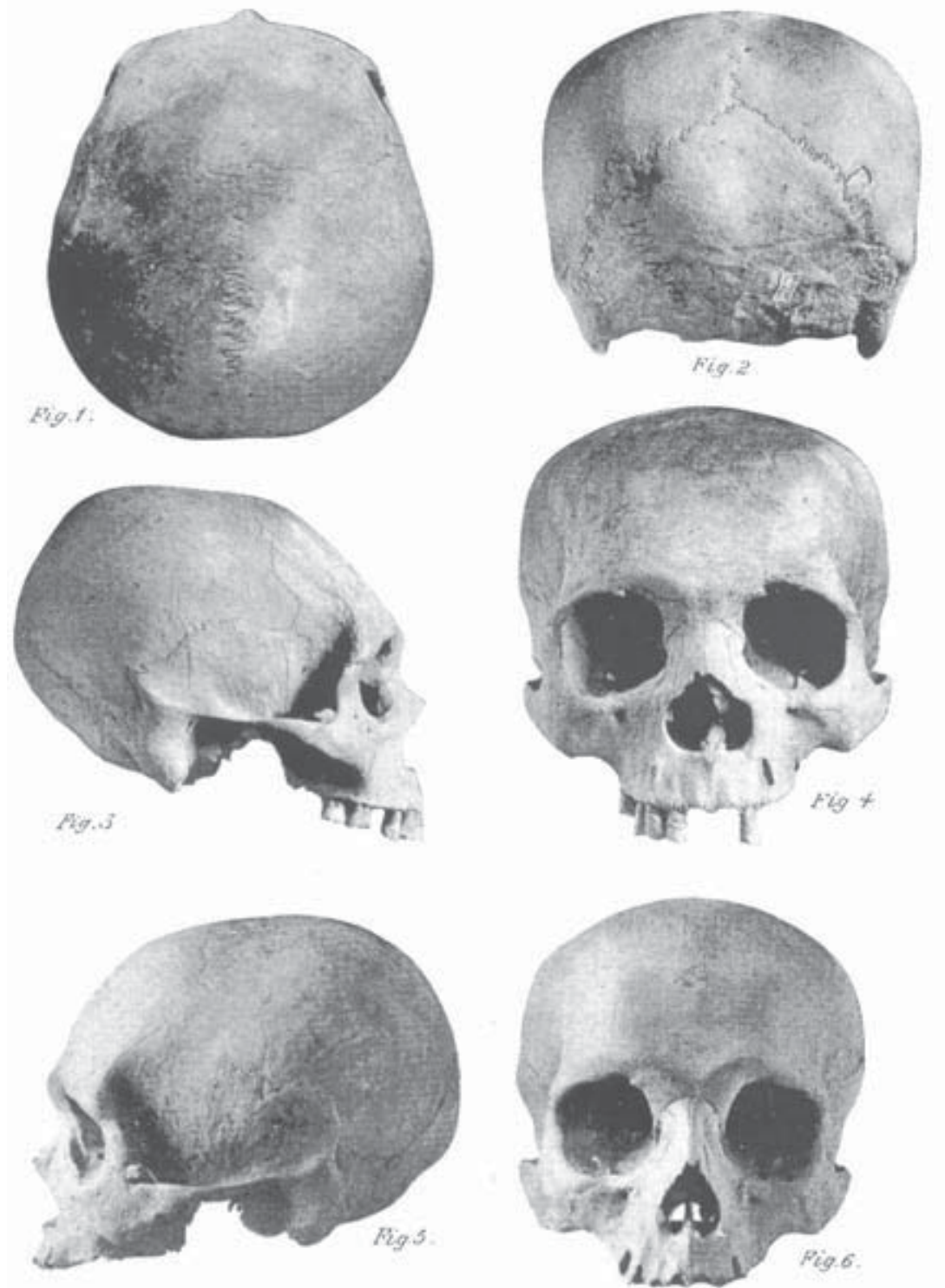


Plate Ia. Crania of aborigines of Jamaica

Figs. 1-4, Skull O. Figs. 5-6, Skull G. Skull O is considerably artificially deformed, but Skull G is scarcely, if at all, deformed.

are often masked by the lateral bulging of the walls of the cranium. The obelion is usually flat, and so is the occipital squame. This artificial deformation, as it is a combination of the "annular deformation" and of the "simple frontal deformation" (also known as the "deformation toulousaine"), is analogous to the "macrocephaly" of the ancients (*cf.* Broca, *Instructions Craniologiques*, 1875, p. 156); but instead of lengthening the skull it appears to shorten it.

Viewed from above, the axis of the greatest diameter is seen to be placed rather far back; the head form may be described according to Sergi's nomenclature as "Sphenoides rotundus." The sides are well filled, the greatest diameter usually occurring on the squamous portion of the temporal just below the suture.

In a front view, the broad flat receding forehead is typical, the glabella and supraciliary arches are moderately prominent. The orbits are generally large and rounded, but the nose is subject to great variation. The nasals may be fairly narrow and arched transversely, or very broad and flattened; the apertura pyriformis may be narrow or broad, in the majority of cases its lower margin has the appearance known as the *forma infantilis*.

A side view of the crania shows the receding frontal with its slight posterior annular swelling, the shallow anterior parietal annular groove, and the parietal eminences.

The end view of a typical cranium is very characteristic, it appears as a transversely elongated oblong with somewhat convex sides and perhaps a slight median keel.

The palate is usually broad and horseshoe shaped.

The sutures as a rule are very simple—but there are a good many wormian bones; these are especially characteristic of the temporal squame—usually there is a long anterior wormian which extends across the pterion, and not infrequently there is one at the hinder border of the squame. Wormians frequently occur in the lambdoidal suture; but the "os inca," and similar separate ossifications, are not specially common.

The average *cranial capacity* of 7 crania is 1282 (min. 1100, max. 1470). With two exceptions, they are all microcephalic.

The *cephalic index* of 16 crania is 88.36 (min. 81, max. 93). Thus all are brachycephalic. The average glabello-occipital length is 167.6 (min. 154, max. 177). The [24] average maximum breadth is 147.7 (min. 136, max. 163).

The *length-height index* averages 73.2, that is metricephalic (min. 67.8, max. 77.7). The *breadth-height index* averages 83.4 (min. 74, max. 89.1).

The average *gnathic* or *alveolar index* of 15 crania is 99.9 (min. 90, max. 107). The figures are very evenly distributed between the ortho-, meso-, and prognathous groups.

The average *upper facial index* of 9 specimens is 50.8, or just within the leptoprosopic group, (min. 46.2, max. 55.7).

The *naso-malar index* of 19 crania averages 107.6, or just mesopic, (min. 104.7, max. 111.3). Only one is prosopic, the remainder are fairly evenly divided between mesopy and platyopy.

The average *orbital index* is 92.5, or very megaseme; only six orbits, out of about forty, were mesoseme, (min. 85.4, max. 100—three orbits).

The *nasal index* is irregular, the average of 20 crania is 51.2 (min. 40.5, max. 69.2). The numbers are fairly equally divided between lepto-, meso-, and platyrhiny.

The average *palatal index* of 10 crania is 119.5 (min. 101.7, max. 131.3, two specimens). With two exceptions, all the examples are well within the brachyuranic group.

The average cranium may be described as microcephalic, brachycephalic, metriocephalic, mesognathous, leptoprosop (barely), mesopic (barely), megaseme, mesorhine, brachyuranic.

As an example of the variation that occurs, the following is the analysis of these crania (G, O, and P) which belong to the collection kindly loaned by the Rev. W. W. Rumsey:

G. Megacephalic (1470), brachycephalic (84.7), metriocephalic (75.1), mesognathous (98.9), leptoprosopic (52.6), mesopic (109.2), megaseme (95 and 96.2), leptorhine (43.3), dolichuranic (101.7).

O. Microcephalic, brachycephalic (85.8), barely metriocephalic (72.1), mesognathous (99.4), chamaeprosopic (49.2), barely mesopic (107.7), megaseme (91.1 and 90.5), platyrhine (61.4), brachyuranic (125.5).

P. Microcephalic (estimated), brachycephalic (90.2), platyopic (106.9), mesoseme (88.3 and 87.5), platyrhine (56.1).

The first of these is artificially deformed to a very much less extent than the two latter. In the detailed paper the effect of artificial deformation will be more fully discussed, not only as it modifies the head form, but also its apparent action on the bones of the face.

I would like to take this opportunity of thanking the Board of Governors of the Institute of Jamaica for entrusting this valuable collection to me for description, and for the patience with which they have waited for the report.

A. C. H.

Pottery

From the various caves have been obtained the best and most perfect representatives of the ceramic art of the Jamaican aborigine. Although quantities are known from the kitchen-middens, it is all in a fragmentary condition. The ex-

amples from both sets of remains are, however, of the same type. A collection of eight vessels was obtained by the Rev. W. W. Rumsey, from the Richmond Hill cave, and odd perfect ones have been secured from others; while it appears that many more have been removed in the past and either broken or dispersed. The quantity of fragments of all sizes met with in such a cave as that on the California estate demonstrates that the numbers of vessels originally located in some of the sepulchres must have been considerable. The Halberstadt cave, containing so much osteological material, yielded, by contrast, only two small vessels. Most are blackened by contact with fire, patches of carbon still remaining on some. With regard to their significance, the larger examples probably represent mortuary vessels, more especially for the head. From both Goat Island and Richmond Hill caves a boat-shaped vessel was obtained with the skull still inside (Plates VI, fig. 1; V, fig. 5); and it is stated that some of the crania from the Pedro caves were in earthenware receptacles. The two vessels mentioned are certainly the most perfect and most ornamental of the examples now left. The smaller vessels, incapable of holding skulls, probably contained the food and water placed along with the dead, as is so often the custom among uncivilized races. For further description of the pottery, see page 37, et. seq.

Miscellaneous Objects.

Close examination of the cave earth at Richmond Hill yielded thirty-two small examples of the shells of *Oliva reticularis*, Lamk. They are all artificially perforated through the body whorl, a little distance [25] from the mouth (Fig XIV.), apparently for the purpose of being strung together as if to form a necklace or armlet. They are more fully described on page 45, along with three perforated shells from the Halberstadt cave.

Among the other objects obtained are skulls and bones of the Indian coney, fragments of marine shells, an occasional flint flake, and various land shells, the admission of some of which into the caves has probably no anthropological significance.

Burial of the Aborigines

It has been suggested by several writers that the human remains met with in the caves in Jamaica are those of Indians who were attempting to escape from the more warlike Carib, or from the cruelties of the discoverers of the island—the Spaniards; that the caverns were places of refuge, and that some of the unfortunate natives became immured and met their death in one way or another. From a consideration of many of the connected circumstances this explanation appears in most cases untenable. Most of the caves are of small dimensions, not

larger than sufficient to hold a few living persons. The Halberstadt cave, for example, could not by any means hold more than about a dozen living adults however packed, while from the bones entombed we have evidence of at least thirty-four individuals of different ages.

Similarly with the Richmond Hill, Botany Bay, and California caves. Further, the proportions of the bones do not correspond. Compared with the number of lower-jaws and the other bones, a deficiency of skulls is always evident; while the limb bones do not show a corresponding completion. In this connection it must, however, also be borne in mind that few of the caves are probably now in their primary condition as left by the Indians.

No indications that the caves ever formed regular places of habitation are presented. Tropical conditions would never necessitate such a course, and, as shown above, the size of the holes precludes this. All the circumstances seem to warrant the idea that the caves served the Indians as natural ossuaries, or places where the bones of their fellows, perhaps some time after death, were collected and deposited in common sepulture.

What historical knowledge we have of the methods of burial of the Indian of the West Indies supports this view. Writing of those of Hayti, Ling Roth, quoting Oviedo, Moralis, and Ferdinand Columbus states (1887, p. 277): "When a cacique died two (or more?) women were buried with him alive. . . . The best beloved of the King's wives or concubines were buried with him. . . . Their custom is, to place beside every of them in their sepultures, a cup of water and a portion of the fine bread or cazabi. . . . In some cases the cacique's body is opened and dried at the fire, that he may keep whole. Of others they keep only the head. Others they bring in a grotto, and lay a calabash of water and bread on his head."

In his second voyage, Columbus states: "On examining some things which had been very cautiously sewn up in a small basket, we found a man's head wrapped up with great care; this we judged might be the head of a father, or mother, or of some person whom they much regarded; I have since heard that many were found in the same state, which makes me believe that our first impression was the true one" (Major 1870, p. 52-3).

It would also appear from the finding of the skulls in earthenware vessels in the caves as if special care were taken in the disposal of the heads; and, as already mentioned, these vessels are the most perfect and ornamental.

Caves containing human remains in other West Indian Islands are referred to by Mr. F. A. Ober in "In the Wake of Columbus," and in "Aborigines of the West Indies." In the first work (1893), writing of the Bahamas, he states (p. 75): "We have bones and skeletons, particularly crania, which undoubtedly pertained to the Lucayan or Ceboyan, as he has been called. These have mostly been found in caves, and generally beneath the cave earth or bat guano;

and not one island alone has produced them, but many, throughout the Bahamas." Prof. W. K. Brooks, who described two Bahaman skulls secured by Mr. Ober, speaks of them as "extremely broad in proportion to their length," and as "among the most brachycephalic of all human skulls," and further remarks that "The Ceboyans flattened their heads artificially in infancy, so that the vertical part of the forehead is completely obliterated in all adult skulls, and the head slopes backward immediately above the eyes."

In the second contribution (1894) Mr. Ober refers (p. 12) to several flattened brachycephalic crania from Cuba and (p. 23) to two others from Santo Domingo, all found in caves.

[26]

Description of the Caves

Halberstadt.

An account of this cave has already appeared in the Journal of the Institute, April, 1895, by the Editor; in *Nature*, June 20, 1895, by the present writer and a preliminary notice of the bones obtained was given by Sir Wm. H. Flower, in *Nature*, Oct. 17, 1895.

The following are the chief facts of importance: The cave is a natural formation in the rugged honey-combed limestone rocks on the Halberstadt Estate, in the Port Royal Mountains, St. Andrew. It is situated at a height of about 2,000 feet above the sea level, the shore, along a direct road, being about two miles distant. A labourer first discovered in its vicinity a human limb bone, which led the Rev. W. W. Rumsey to make further search. After removing a number of loose limestone blocks it was seen that the latter concealed a cavern in the rocks. Descending into this, through a very narrow aperture, the floor was found covered with human skulls and bones, on the top of which were the pieces of what appears to have been a cedar-wood canoe.

The cavern is formed in the sloping hillside and is irregular in shape, extending inwardly for a distance of about twenty feet. It is somewhat triangular in vertical section; the walls are smooth, as if waterworn, and in places have a little stalactitic matter upon them. The cave is barely sufficiently high and broad in its maximum dimensions to allow an adult to sit upright. When first discovered no orderly arrangement of the bones was apparent, though Mr. Rumsey states that the skulls appeared to be arranged in a row. No attempt at burial had been made, most of the remains being superficial. A thick deposit of yellowish powdery cave earth occurs, and into this some of the bones had sunk. The upper skulls and bones are well preserved, while those below, especially in the cave earth, have suffered a little through decay.

The superimposed cedar-wood slabs are certainly suggestive of the remnants

of a canoe, one portion being partially hollowed out and truncated; placed together, however, they do not indicate an entire vessel. Numerous references are given by the Spanish writers to canoes possessed by the Indians. Buried amongst the bones was found later a breastplate-like slab of the outer part of the trunk of a *Lignum-vitae*, exhibiting no sign of decay. If, as has been suggested, the caves are to be regarded as natural ossuaries of the Indians, it seems not unlikely that the cedar-wood slabs, and also that of the *Lignum-vitae*, may have been used for carrying the bones thither; which work completed, the former was finally thrown into the cave over the bones in the position in which it was first seen. In addition to the bones were found two small earthenware vessels, one perfect, but the other not quite complete; two perfect skulls and other bones of the Indian coney; three shells, each with an artificial perforation; the larval cases of some beetle, along with a few land shells evidently of accidental occurrence; and a portion of what was apparently some implement.

About half the quantity of the bones was first sent to the British Museum and Sir Wm. H. Flower arranged with Prof. A. C. Haddon to carry out the full details of the examination of these, and of the others transmitted later. In the preliminary description by the former the following facts of interest are already noted: "None of the bones show any wounds or marks of violence, but all appear to be those of persons who have died a natural or slow death. Both sexes and almost all ages are represented, from children of four or six years to very old persons, the proportion of the latter being remarkable. Most of the skulls show evidence of artificial depression of the frontal region in various degrees, the mode being similar in all, evidently produced by the flat board upon the forehead—the commonest custom throughout so large a portion of the ancient inhabitants of the American type."

The bones coming under the observation of Prof. Flower necessarily did not show much corresponding completion, and even when compared with the remains which were then in Jamaica this feature is of considerable significance. The number of different paired bones such as the *Humeri*, the *Radii* and *Ulnae*, the *Tibiae* and *Fibulae*, does not agree with one another, or even with the right and left of the same kind; and these again differ markedly from the number of skulls and lower-jaws. Thus, in all, only ten approximately entire crania and very few fragments of other cranial bones were obtained, not sufficient to demonstrate the [27] presence of more than twenty individuals. Of lower-jaws, however, there were 28; right *Femora* 32, left 34; right *Tibiae* 29, left 26; *Humeri* 27 right and 27 left. The maximum number of individuals therefore of whom we have remains from the cave is thirty-four, including representatives of both sexes and of all ages. The good state of preservation of most of the bones precludes the idea that any of the larger ones may have undergone complete decomposition within the cave.

Bloxburgh.

Lieutenant J. E. Henderson, of the W. I. Regiment, while making a military survey of the district around Halberstadt, a locality already celebrated by the Rev. W. W. Rumsey's previous discovery, also investigated many of the caves. He has kindly forwarded the following account of his results: "In May and June, 1896, being in the vicinity of Halberstadt, Bull Bay, I explored a large number of caves in the limestone formation between Halberstadt Great House and Bloxburgh. The first one I entered, which is within some 250 yards of the ruins of Pictorial Cottage and quite close to the main road, was very easy of access, having a large opening. At the bottom I found a skull and a large number of human bones lying about, and on a ledge of rock a perfect specimen of a boat-shaped earthenware vessel full of earth. On searching further I found a large shallow dish of similar material jammed in amongst some debris. This latter was broken at one side, but I eventually found the missing fragments. The cave in question is rather a damp one and the best portion of it is filled with large boulders and debris fallen from above. The bones were very much decayed and could not be removed whole. I found no other pottery or any ornaments or implements, but as the cave is considerably deeper than I was able to get at, and many more bones could be seen lower down, it is quite possible that a thorough search and removal of the debris would bring something more to light. As a general rule the caves in this district are on the underlay or sloping down, and have become full of earth or large boulders, making a thorough search impracticable.

In every case except the first the human bones were lying in great disorder, broken fragments being found in perhaps half a dozen places in one cave. There are many more similar caves which I had not time to explore, in this district."

Botany Bay and Cambridge Hill, St. Thomas.

These two caves containing aboriginal bones and other remains are in close proximity, being only about a quarter of a mile apart. We are indebted to the Rev. W. W. Rumsey for bringing them to public notice, and for affording the writer an opportunity of investigating them. They occur in a hilly part of the south western portion of St. Thomas, known as the Botany Bay district, and are situated about four miles from the sea, a fine view of which is obtained from each. The caves are natural formations in the Tertiary Limestone. All around the latter is very rugged and so honeycombed by weathering and solution, that, in places, walking becomes dangerous, the superficial rock being in the condition of large, irregular blocks. The aperture of each cave is on a level with the inclined surface of the ground, and admits of easy entrance. The immediate district is today ruiate.

Botany Bay Cave. The opening of the cave faces the south, and is from five to six feet in diameter. It leads into a very irregular sloping cavern, extending a distance of twenty-five feet. The vertical height is in places twenty feet, and the average width about ten feet; the roof and sides are covered with stalactitic matter. Many blocks of stone, loosened from the roof, have fallen on the floor, and, along with a thick deposit of cave earth, cover some of the remains. When first discovered the more distant part of the floor was largely strewn with portions of human skulls exhibiting the frontal flattening, and numerous other bones associated with fragments of pottery. On a slightly raised ledge at the back were found five nearly complete skulls. No perfect examples of pottery were obtained. A search amongst the debris and loose earth revealed similar remains, but no additional objects of anthropological interest, with the exception of two or three broken marine shells.

Cambridge Hill Cave. Although generally distinguished by this term this cave is a little to the south of Cambridge Hill and slightly more distant from the sea than the previous one. From the surface it presents merely the appearance of a steep, narrow crevice in the rugged limestone rock, two or three feet across, and twenty-seven feet in length. Two step-like projections occur between the aperture and the termination, [28] and on these as well as at the bottom, bones were found promiscuously scattered and mingled with the cave earth.

Seven practically perfect crania were secured and fragments of many others. From this cave was obtained the best collection of aboriginal earthenware vessels now existing in the island. On the second ledge from the opening were found, embedded amongst the cave earth, thirty-one artificially chipped and perforated shells of *Oliva reticularis*, described on page 45.

One of the flattened skulls was laid on its side in the most ornamental vessel of the collection, (Plate VI, Fig. 1).

Dallas Castle.

This cave, investigated by the Rev. W. W. Rumsey, in August 1895, is situated in the south east part of St. Andrew, about three miles from the coast. It occurs in a hillside, the interior presenting no declivity.

The aperture varies from two to four feet across, and not more than two or three adults could possibly occupy the cave at one time.

The country people report that formerly the place contained many skulls and bones, some of which have been removed by obeahmen for their superstitious practices, while others have been buried by the people themselves. Mr. Rumsey only obtained a large, coarse, circular vessel with a human lower-jaw inside.

Red Hills—Historical Accounts.

Sir Hans Sloane, in the Introduction to his "Voyage, etc. (1707)," an important work treating largely of the Natural History of Jamaica, from material col-

lected about 1670, referring to the destruction of the Indians by the severity of the Spaniards, by sending to mines, says (page iv.):

"I have seen in the woods, many of their bones in caves, which some people thought were of such as had voluntarily inclosed or immured themselves, in order to be starved to death, to avoid the severities of their masters."

Again (page lxx.) he refers to a Mr. Barnes, a carpenter, who lived on the Red Hills, four miles from Guanaboa, St. Johns, having "found a cave in which lay a human body's bones all in order, the body having been eaten by the ants. The ants nests we found there, the rest of the cave was filled with pots or urns, wherein were bones of men and children, the pots were oval, large, of a red(d)ish dirty colour. On the upper part of the rim or ledge there stood out an ear, on which were made some lines, the ears were not over an inch square, towards the top it had two parallel lines which went around, being gros(s)ly cut in the edges near. The Negroes had removed most of these pots to boil their meat in. The cave was about eight or nine foot diameter, roundish, and about five foot high, it was on a sufficiently high precipice of nine foot steep ascent before one came at it. It was before opening curiously shut in on all sides with thin, flat stones. The ants had eat one carcass to the bones, and had made holes in their ends, whereat they enter'd, I suppose, thus to eat the marrow."

Other historical writers furnish similar evidence, which may best be inserted here. Long, writing in 1774 (*History of Jamaica*, Vol. II., p. 153) refers to the caves in the mountains of County Surrey: "In most of them are found large quantities of human bones, almost consumed by time, the teeth alone being in a tolerably perfect state. Some have conjectured, that these places were either used by the Indians as ossuaries, or else as occasional retreats, to elude the search of an enemy. The most probable account is, that the bones belonged to those poor Indian natives who fell victims to the barbarity of their Spanish conquerors."

Bryan Edwards, in his *History of the West Indies*, written in 1793, mentions (Vol. I., p. 169) that in his day, in Jamaica, "caves are frequently discovered in the mountains, wherein the ground is covered with human bones; the miserable remains, without all doubt, of some of the unfortunate aborigines, who, immured in these recesses, were probably reduced to the sad alternative of perishing with hunger, or bleeding under the swords of their merciless invaders."

Goat Island.

From a deep cave on this island in Old Harbour Bay, Mr. Leo E. Verley obtained the perfect oval-shaped vessel, with expanded ornamental handles, shown on Plate V, Fig. 5.

The flattened skull of a young individual was inside the vessel, and associated with it were two imperfect limb-bones. Nothing more is known of the aboriginal remains from this, at present, almost uninhabited spot. Consid-

ering the accounts Peter Martyr and Bernaldez give (Jour. Instit. Jam., Vol. II., No. i., p. 32) of the inhabitants all around the Bay called by Columbus "De las Vacas," and especially of the cacique and his party who there visited him, the locality must have been thickly populated in aboriginal times, and many more remains may still be obtained. Lately researches have been carried on with considerable enthusiasm and success on the mainland around Old Harbour Bay, particularly in the District of Vere.

District of Vere.

Several caves have been examined in this lower district of Clarendon by Mr. R. C. MacCormack, from whose accounts we have the following details:

Three Sandy Bay Cave. This yielded a nearly perfect, oval-shaped vessel (Plate V, Fig. 2), much resembling that obtained, with a skull inside, from Goat Island; also other pottery indicating vessels of large dimensions. The portion of a skull was also found associated with numerous limb and other bones, and several conch shells. The entrance to the cave was partially concealed with stones.

Another cave a mile or more from this place, and about a mile from the sea, yielded small pieces of pottery and some large, thick, coarse fragments.

Jackson Bay Cave. This third cave contained the very perfect, flattened human skull of some aged person, and fragments of another skull; along with numerous limb and other bones, turtle bones, pottery, and shells. The cave is very large, has two entrances, and is lofty in some parts.

All the objects from the three caves have been added to the Museum collections.

Pedro Bluff.

We have several notices of caves, containing human remains, in the southern border of St. Elizabeth. They have long been known and from all accounts have yielded in the past much important material, most of which has unfortunately been lost or dispersed. They are referred to in Plummer's "Geography and History of Jamaica," the author of which also informs me that he has seen numerous skulls and vessels which had been removed in years gone by. In a previously unpublished letter from Sir Arthur Rumbold to the Hon. Richard Hill, now in the possession of Mr. L. Hutchings, is given the following descriptive account of a visit to the Pedro Bluff Caves, made on February 25, 1855:

"The Bluff disappointed us. It does not tower above the sea as we expected; its utmost altitude cannot exceed 60 feet. The blossom of the Coratoe (*Agave marrisii*) was magnificent, the bright yellow flowers contrasting well with the sombre hue of the vegetation. We ran close in to the beach on our return, and laughed at Mr. Parchment's hesitation. The pass hence to the cave is very rough.

Ye Gods! What a struggle over the rocky path, holding on by fragile bushes, and tho' I had on thick soled boots, I feared to wound my feet on the sharp crannies and fissures. But a treat is in store. Mr. Parchment leads me to a cave which has long been known; but he promises now to conduct me to one which has been visited but once since its discovery some six months back, and after a search and cutting bush to make a way over a yet more frightful pass, I let myself down into what out of compliment, was then and there christened 'Sir Arthur's Cave.' Mr. Parchment shows several skulls he had found there closely packed together. It was a strange feeling to be nearly the first to have disturbed the abode of the dead after a lapse perhaps of centuries. The cave is formed by a hollow in a rock with a ledge overhanging, and you have to let yourself down to enter it—indeed, so small is the aperture that its non-discovery previously may be easily understood. The dimensions are small, and from the number of skulls in a confined space, it must evidently have been used for purposes of sepulture, though the remains of a Terra Cotta vase would lead one to imagine that the Indians had either eaten there—perhaps when seeking refuge from the Spaniards—or that in accordance with the superstitions of many ancient races they had left food for the souls of departed friends. With some of the frail emblems of mortality we embark to revisit friend James's house. But I must not omit to tell the learned visitor that just on leaving Mr. Parchment's house, if the sea be calm and the canoe can range alongside, a stone may be seen which I was assured contained an inscription in strange characters.

I regretted not being able to inform myself on this point. Arthur R." [30]

In the Museum are three or four skulls, aboriginal in character, but without any history accompanying them. Mr. Hutchings identifies them as being those obtained by Sir Arthur Rumbold and Mr. Hill from the Pedro Bluff caves. The Hon. Henry Shirley also found in these caves two skulls, one of which was taken to England by Mr. Fawcett in 1890, and was submitted to Sir. Wm. Flower. The latter's account, recognizing the aboriginal character of the skull, was published in the *Journal of the Anthropological Institute*, and is referred to on page 22.

In Vignes', "Travels in America," 1823, is a reference to some artificially flattened crania of aborigines met with in St. Elizabeth. No doubt these were obtained from the caves under consideration.

Hounslow.

Mr. W. L. Maxwell writes from Hounslow, in the Santa Cruz Mountains, St. Elizabeth, referring to a cave in the vicinity which requires further investigations; his father secured specimens of skulls and pottery from it, but unfortunately they were destroyed by fire a few years ago.

Mr. Maxwell has sent to the Museum fragments of pottery since obtained

by him; they are of the same type as those from other caves. He also mentions that other bones still remain, but that everything was left for a more complete examination.

Drummond.

Mr. Arthur Hale contributes information relative to a cave in the limestone between Retirement and Nonpareil, near Drummond Pen, in the parish of Westmoreland. It has been known as Indian Head Cave for a very long period, and visited from time to time by people, who have removed nearly all the remains, such as skulls and long bones. Much pottery has also been obtained. The floor is strewn with fragments of rock, fallen from the sides and roof.

Negril.

Mr. A. C. Bancroft has, at request, kindly examined some of the caves near Negril, the most western part of the island. From one in the district called Indian Head, near South Negril Point, he forwarded a parcel of bones and pottery to the Museum; and from another cave near by a nearly perfect oval-shaped vessel (Plate V, Fig., 4), aboriginal in type, but more simple than is usual with cave vessels. This was also associated with human bones. The same investigator also mentions other caves in the neighbourhood which still require exploration.

California.

In regard to this cave, which is the only one containing Indian relics yet known on the north side of the island, Mr. Taylor Domville writes as follows: "The cave which contains the Indian remains is at California, in St. James. It is under some flat stones in a ruinate pasture near the sea. The entrance is just large enough for one to pass through. It appears to have been once well packed with human remains and jars. An old man told me that he remembered seeing an overseer take out several skulls. When I went there I found the floor of the cave covered with fine dust and quantities of broken jars. One of these was rather large, about 16 inches in diameter, but it unfortunately got broken when I was moving. There was also a large quantity of portions of human skulls, leg and arm bones, etc. When I removed from Running Gut I left a small bundle of them in the overseer's house."

Mr. Domville sent two human lower-jaws and a perforated piece of pottery to the Anthropological Exhibition. The latter is unique amongst our aboriginal earthenware. The hole is circular and nearly an inch in diameter, with a thickened, well-shaped rim. Of the remains, referred to above, as previously removed from the cave, only another lower-jaw and the frontal portion of a skull

could be obtained, the others having been destroyed or buried. Sufficient of the skull remains, however, to show that it had been artificially flattened in front.

The cave occurs on what is known as Burnt Ground Pasture, now more or less ruinate, and about three quarters of a mile from the sea. It is open at each end, being merely a large irregular, under-ground passage in the White Limestone, which all around is considerably honey-combed and cavernous.

The upper end is now partially closed by a deposit of rock debris, but may perhaps have been walled-up at one time; the lower end opens nearly vertically to the surface of the ground, from a depth of about six feet. The length is about twenty-five feet. Inside it is regularly arch-shaped, being nearly eight feet broad and three or four feet high [31] in the middle. The roof has stalactitic matter upon it, while the floor is covered to a considerable depth with boulders, bat manure, pieces of broken pottery, and bones.

It is evident that the cave has been entered and the contents much disturbed on previous occasions, and, as already indicated in Mr. Domville's account, the superficial human objects removed. Those remaining were mostly fragmentary, and buried in the brownish manure deposit. Most of the bones are much decayed from being embedded in the earth, and from attacks by ants. Several lower-jaws, many free teeth, portions of skulls, and numerous long bones and other parts of the skeleton were obtained, indicative of every variety of age. Of five lower-jaws collected four are those of old individuals who had lost most of their teeth, the sockets being nearly obliterated. From all the remains found, and others which can be traced, more than a dozen individuals are shown to be represented.

Large quantities of pieces of pottery were obtained, one remarkable feature being the great size of the vessels they represent. From the curvature of some it is safe to assert that the diameter when perfect must have been between one and two feet. The ornamentation and handles are of the usual type, the vessels appearing to most closely resemble those obtained from the Cambridge Hill cave and from those at Vere.

Although a careful search was made amongst the debris on the floor, the cave did not yield anything else of anthropological interest, with the exception of a few flints.

It seems probable that, as in the case of the other caves described, the California cave represents an aboriginal burying place, and that some of the larger vessels were used as urns in which to place the skulls, while the smaller ones served to contain food and water supplied to the dead.

The discovery of cave relics in this particular district is all the more interesting because of the numerous refuse-heaps found on the surrounding hills, all pointing to this part of St. James as being one of importance in pre-Columbian times.

CHAPTER III IMPLEMENTS

Jamaica has been noted by several writers as having furnished a particularly abundant series of examples of the stone and flint weapons and implements of its ancient inhabitants (1870, p. 239). This is certainly true as regards the various stone implements, but flint objects are exceptional; flakes having been only recently discovered in the refuse-heaps.

In the Exhibition has been gathered together probably the largest series of implements ever shown from the island. Inspector Church's collection numbered 171 specimens; the Institute's about 70; Dr. G. J. Neish's 40; Lady Blake's 18; Mr. W. H. Plant's 21; while additional minor ones bring the number up to nearly four hundred. Notices and presentations of other small collections are constantly being received at the Museum, while the peasantry are known to still have occasional ones in their possession and to be often finding them. Quite recently a collection of one hundred specimens has been obtained from and around the District of Vere. This quantity was secured by the exertions of one collector, within a period of three or four months. Numbers have also left the island at various times and been dispersed. Inspector Church informs me that between one and two hundred have been thus sent abroad by him, and Lady Blake has obtained at various times a total of over a hundred examples. Considering the small extent of Jamaica, 4,193 square miles, this number of specimens is rather surprising. A further important fact is the uniformity in the type presented. About 90 per cent belong to the well known [32] petaloid or almond-shaped celts, with only slight variations in form. The remainder are fashioned as wedges, chisels, axes, mealing-stone rollers, smoothing stones, or are spherical.

Celts

Different forms of celts are presented on Plate I.

Many of the specimens are apparently accidentally and recently chipped at the broad cutting edge, and more rarely at the narrow edge; but practically all are well shaped, beautifully finished, and smooth. Many are highly polished, and others appear to have lost their original polish by long burial in the ground. Most are sharpened, while a few have the broad cutting edge rounded. Opposite parts are not always symmetrical to any axis.

The sizes vary from some about an inch in length to a petaloid one, lent by Mr. H. P. Deans, 9 inches long and 4 inches across at the broadest part.

The material of which the implements are composed varies considerably, ex-

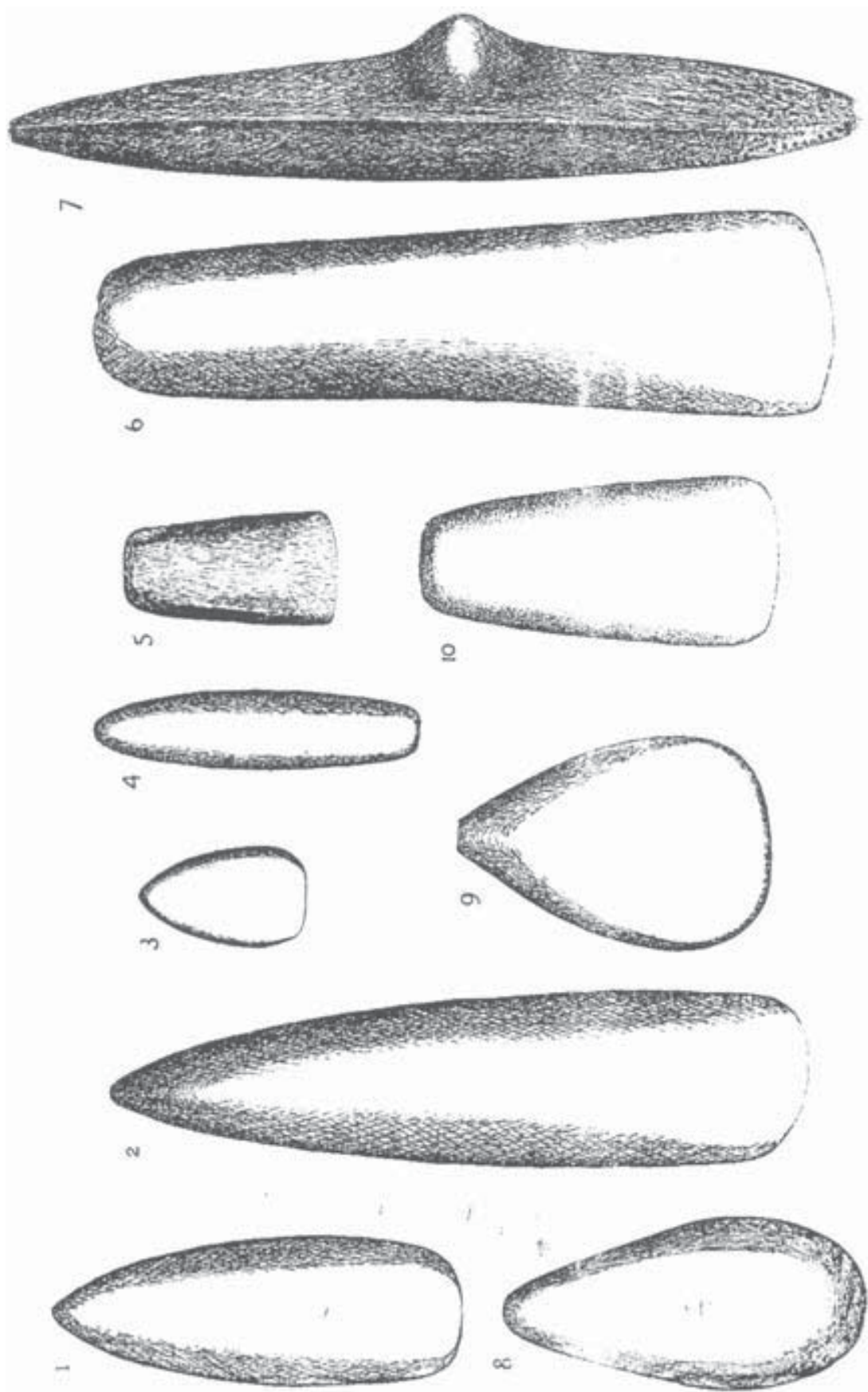


Plate I. Stone Implements.



Fig. VII. Spindle-shaped implement, sharpened at each end.

amples of most of the types of sedimentary, metamorphic, and igneous rocks being met with.

The most abundant material undoubtedly belongs to the trappean series of rocks, including the trachytes, felsites, rhyolites, and basalts, so prominent in various parts of the island. Dolerite is rather common, as well as a greenish schist, and others graduating between quartzites and gneisses. A metamorphic siliceous green rock resembling jade, and taking high polish, is met with, sometimes with light and dark bands. Most of the material is such as occurs in the island. The flint is the same as is derived from various districts.

Practically all the specimens in Jamaica are picked up on the surface of the ground by the peasantry and others, or are found embedded in the superficial deposits. They are often exposed by the heavy tropical rains, and are to be met with in nearly every part of the island. In past times they were apparently much more abundant than now, it being no uncommon occurrence to meet with them while digging. Collectors today obtain them largely from the country people, who keep them in the bottom of their water-cooling jars; the expressed purpose being to keep the water cool. They are supposed also to have some influence in diverting lightning. The petaloid ones are known amongst the peasantry, as is the case in other countries, as "Thunderbolts," and are believed by them to fall from the clouds during the rains.

Occasionally broken specimens, evidently discarded, have been met with in investigating the shell-mounds, and several examples of shell implements have also been collected from there.

The uses to which the Indians applied their implements were no doubt varied. It is likely that they were employed both as weapons and for industrial purposes, and perhaps also for ceremonial functions; and though some axes, celts, or chisels may have been held in the hand, others were fixed in wooden handles. Somewhat similar examples, lent from British Guiana, give evidence of the abrasion produced at the place of fixture; while others from the same source show deep notches or grooves (see Plate X, Figs. 3 and 4, "Among the Indians of Guiana"). It is remarkable that, of the several hundred examples represented in our collection, only two much battered specimens, one of which is shown in

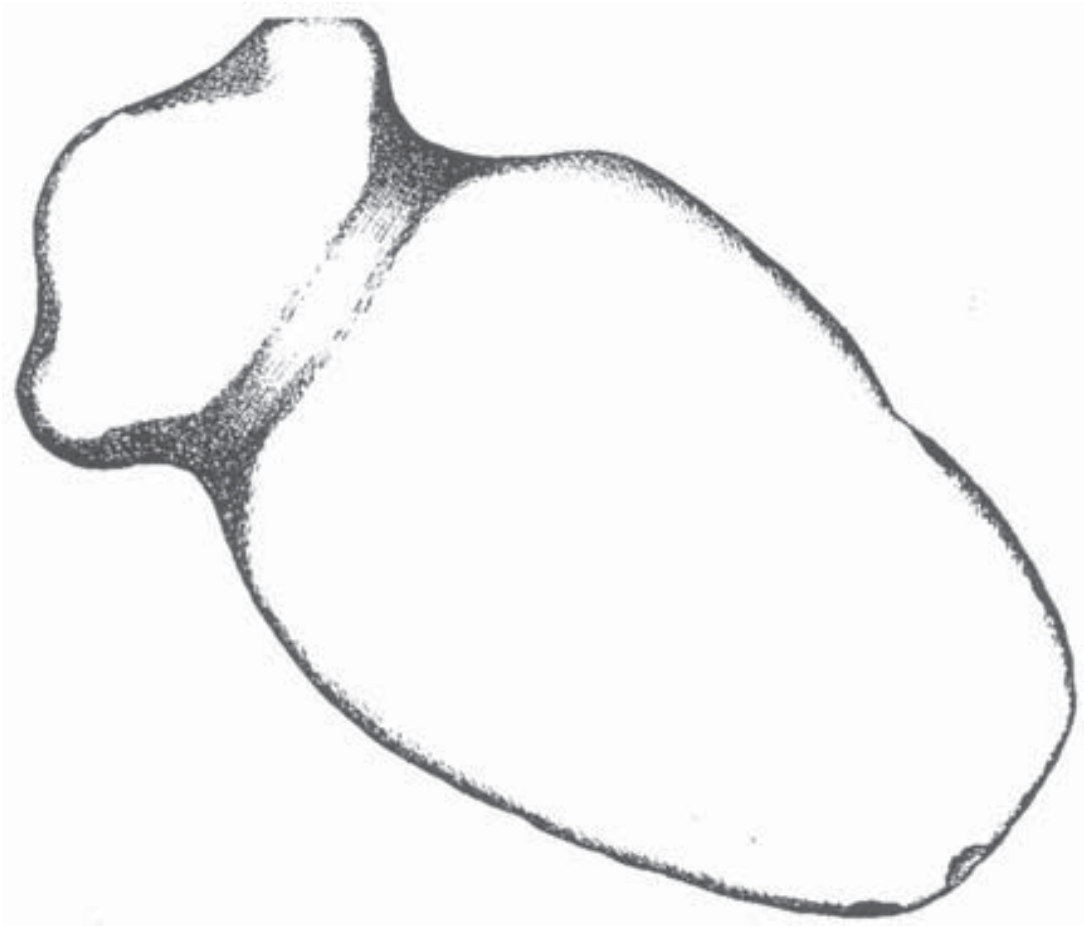


Fig. VIII [Listed also as Plate II]. Axe-blade.

Figure IV, 4, give any indication, by being notched or abraded, of having been fixed in handles. A celt similar to the Jamaican forms and fixed in a handle of *Lignum-vitae*, was found in a cave in the Middle Caicos Islands by Mr. G. J. Gibbs, and is now in the possession of Lady Blake. It is figured in the Institute Journal, and in the "Latimer Collection" (Figure 11, not Figure 12). The well finished perfection of form and highly polished surface of many would appear to preclude the idea that they were mainly employed for industrial purposes. In the Museum is only one specimen (Figure VIII) of the large axes, such as are more characteristic of the Lesser Antilles, and which certainly appear better adapted for cutting wood, etc.

While perhaps many may have been used as weapons, it seems not unreasonable to suppose that some may have been regarded [33 is Plate II, (Fig. VIII, Fig IX)] [34] as desirable ornaments, or, as having had a ceremonial function.

Figure 1, Plate I, is a specimen from Negril, at the western extremity of the island, and was lent by Lady Blake. It is formed of some black metamorphic si-

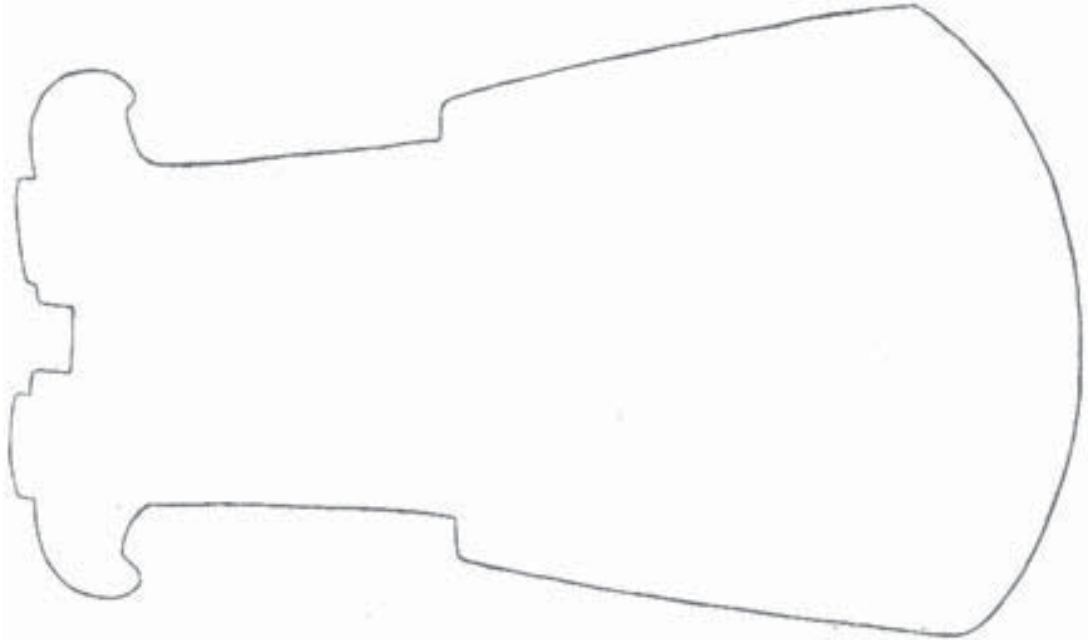


Fig. IX. [Listed also as Plate II]. Axe-blade, from Grenada.

liceous rock, and has taken a very high polish. Examples of this kind are much prized by collectors.

The celt represented in Figure 8 is constructed of a reddish limestone, the fossil corals and shells being distinctly seen. It is a perfect example, apparently as if just turned out by the manufacturer, having some of the scratches produced by the smoothing and polishing still visible. A similar, but thin, highly polished, petaloid example, made of quartzite, is in Dr. G. J. Neish's collection from St. Thomas-ye-East. Its donor suggests its being a "hatchet of ceremony."

Figure 7 is a unique specimen of the petaloid type, having a central, rounded protuberance or boss, perhaps to afford greater security or firmness in using. It is 9 1/2 inches long, and 3 7/8 inches at its greatest breadth. A not uncommon type is the one represented by Figure 4. The body of the celt is almost cylindrical, but it tapers at one end and is edged at the other. An almost similar one is represented by the spindle-shaped form in Figure VII, p. 32, but a chisel edge occurs at each end.

Figure 6 represents a chisel-shaped implement lent by the Hon. D. Campbell. It is formed of some greenish rock, and is 8 inches long and 2 1/4 inches broad at the cutting end, which latter is very smooth and sharp. Wedge-shaped specimens are shown on the same plate, Figures 5 and 10. Among other individual examples to be noted is one from Portland, presented by Mr. W. H. Plant, made up of a greenish volcanic rock containing garnets.

Spherical, Discoidal, and Smoothing Stones

Inspector Church's collection contains four spherical implements, varying from 1 3/4 to 2 1/2 inches in diameter, and formed of quartzite and trappean rocks. Other stones are occasionally collected, more or less artificial in shape, and showing smooth areas, as if they had been used for rubbing or grinding. Some of them were no doubt the upper parts of mealing-stones.

A few of the petaloid implements in the collection exhibit restricted areas indicative of having been used in smoothing other objects. Figure IV, 2, resembles an unequally three-sided pyramid, but all the sides, the base, and the edges are well rounded and polished as if used in rubbing.

Several smooth, flattened pieces of hardened chalk collected from the inhabitants of Botany Bay, and one of limestone from a cave at Kalorama, are more of the character of whetstones, and are similar to those still in use by the peasantry for this purpose.

Dr. Mason states (1877, p. 374): "It is to be understood, in speaking of the objects as smoothing-stones, that we do not know what they were used to smooth, or whether they were used for any such purpose. We use the name for convenience of classification, and shall readily change it as soon as their function is ascertained."

Axes

Figure IV, 3, and Figure VIII, represent two specimens which are unique in the Jamaican series. The first, from Inspector Church's collection, was recently dug up in a field at Highgate, St. Catherine. It is about 3 inches long, as is also the straight head, and is formed of a piece of ornamental metamorphic rock with alterations of light and dark green layers arranged obliquely to the axis of the object. The whole surface is very smooth. The wedge-shaped cutting edge is sharpened and accidentally chipped. It seems very likely that the specimen may have been used as an axe-blade, and that the lateral projections were for the purpose of fixing it more firmly into the haft.

Figure VIII is a much more massive implement, made of diorite. It is 9 inches long, 5 inches across at its greatest breadth, and weighs nearly 4 pounds. It shows a slight abrasion all around the neck.

The axe-blade with a distinct head, neck, and cutting edge is rare in Jamaica; nothing is known of the history of this larger specimen, whether it was originally found in the island or not. It bears a marked resemblance to numerous massive forms from St. Vincent and Trinidad, and to others figured in the "Guesde Collection" (1885).

In Porto Rico and Jamaica, two of the four principal islands of the Greater Antilles, the implements are mostly the smaller almond-shaped celt, while axes are rare; but, in the Lesser Antilles, axes are more numerous than the other pieces. Not much is known of those from the islands of Cuba and Hayti. No axes are mentioned in the "Latimer [35 is a plate] [36] Collection" from Porto Rico; while "The celts, one hundred and thirty-five in number, are of the very highest order of workmanship, being beautifully shaped, and many of them the most highly polished stone implements in the National Museum" (p. 373). M. Guesde states that celts are scarcer than axes in Guadaloupe.

In the Museum collections was a highly finished axe-head from Grenada (Figure IX), lent by the Rev. T. W. Bindley, of Barbados; and, as already mentioned, among the specimens from British Guiana are several examples of implements with well marked notches for fixing more firmly in handles, while larger ones present, in their abraded surface, undoubted indication of having been also fixed to some handle.

Flint Implements

In Figure II (p. 7) are represented two flint flakes or spalls obtained from the refuse-heaps in the island. From practically all these accumulations such flakes have been collected, often associated with large cores from which pieces have been chipped. The Richmond Hill and California caves have also yielded two or three similar examples. None of the flakes appears as if fashioned for any particular purpose, and no well shaped or elaborately worked specimens of flint, with one doubtful example referred to below, have been met with. Flint, arranged in layers or in irregular masses, occurs naturally in various districts in the Tertiary limestone of the island. In some of the parishes it is found in sufficient quantity to be used as road metal. A specimen of such flint is in Dr. G. J. Neish's collection, but some doubt attaches to its significance. It is of an elongated petaloid form, with the broader end carefully rounded; the sides and narrower end are irregular, some parts showing a flaked, unfinished appearance. The general surface is rough and pitted, apparently by weathering. It would appear to be a block of flint of which the intention was to produce an ordinary celt, but, from the unsuitable structure, that had been found impracticable.

Implements made of flint are also extremely rare in the other West India[n] islands. In reference to specimens sent him, Dr. Mason writes: "I am astonished to hear of the abundance of flint in Jamaica. In our Porto Rico collection there is not one chipped object which was surely a tool. Your pieces are spalls or cores." In the introduction to the "Guesde Collection," M. Guesde states (p. 740): "I have had the good fortune to discover in Grande-terre, in a piece of ground which had not been ploughed for 60 or 80 years, two tools of

flaked flint—a knife and hacking knife. This discovery somewhat modifies the theory held to this day by writers on America that flaked flint does not exist in the Antilles.”

Again, Dr. O. T. Mason in his paper on the “Latimer Collection,” from Porto Rico, states (p. 372): “Whether from accident or design, there is not in all the collection a single flaked or chipped implement or weapon. Indeed, I have searched in vain in the National Museum for flaking or chipping from a Carib area.”

Shell Implements

At least half a dozen implements made of shell have been collected recently in Jamaica, associated with the refuse-heaps (Figure III, p. 8). They are similar to those well known from Barbados, of which collections were lent to the Exhibition by the Rev. T. W. Bindley and the Rev. J. Massiah. Some of the Jamaican specimens appear to be made from the recent, not the fossil, shell of the great conch, *Strombus gigas*; the latter is always the case in Barbados, where fossil shells are common and are very hard. The shell does not seem to occur fossil in Jamaica. The cutting edge of the implements is carefully sharpened. M. Guesde mentions (p. 739) that his Guadeloupe collection includes “a series of very fine chisels extracted from the outer edge of the *Strombus gigas*. This part of the shell is very thick and harder than stone. It is certain that the Caribs did not use the living *Strombus*, but were careful to take the fossil *Strombi*, which had in time acquired the hardness of ivory.”

Pestles and Mealing Stones

Pestles. Figure 1, Plate IV, is most probably an ornamental pestle. It is 5 inches in height, 2 3/4 inches across the base, and made of some heavy, basic, igneous rock. It belongs to the Museum collections, but unfortunately is without any other history. The head projects a little forward, and carries two very prominent eye cavities with thick rims. No attempts are made to represent the ears, mouth, or nose. The surface of the eye cavities is partially coated with what appears to be some kind of cement. Representations [37] of arms extend from the large, relief shoulder-blades, first down the sides of the body and then turn inwardly almost at right angles. The base is rounded and shows evidence of having been used for pounding.

The specimen undoubtedly belongs to the same types as those represented in “Flint Chips,” p. 227, figures 4 and 6, and less so to the others on the same page and on pages 230 and 231, mostly obtained from the neighbouring island of Santo Domingo (Hayti), and stated to have been used for pounding maize.

The "Latimer Collection" contains (Figure 20) a rough bell-shaped pestle, with a rude human face on the top. Prof. Mason likewise considers this similar to the San(to) Domingo specimens.

Mr. F. G. Bather lent a partially mutilated, bell-shaped, worn specimen, which must also be regarded as a pestle (Plate IV, Figure 2). It was ploughed up on an estate in Vere, is $4\frac{1}{2}$ inches in height and $2\frac{3}{4}$ inches across the base, and made of a hard sandstone with a light brown patina. The base and lower part of the body are smooth, as if used for rubbing other objects. The head, narrowing upwards, shows little more than hints of ears, nose, and mouth.

Rollers. A massive spindle-shaped and an oval roller, evidently intended for use with metates, are shown in Figure 6, Plate IV. The former specimen, with an end broken off, is still 21 inches in length and $3\frac{1}{2}$ inches at its broadest diameter. When perfect it would, no doubt, be over 24 inches long. Of smaller examples some are short and oval, and others a narrow elongated spindle-shape. They are mostly formed of some doleritic rock.

Mealing-stones or Metates. A well-finished, elaborate, three-legged metate, carved out of a single block of dolerite, is shown in Figure 6, Plate IV. It is 24 inches long and $15\frac{1}{2}$ inches broad and somewhat sagged, standing at the ends 15 inches from the ground and 13 inches at the middle. The sides and ends bear a very perfect incised fret pattern, as also the lateral parts of the two contiguous legs; while the outer area of the odd leg has an incised scroll pattern. A leg, presented by Mr. Bowrey, has evidently been broken off a similar mealing-stone. Another tripod metate, lent by Mr. Lynch, of Spanish Town, is shown in Figure 5, on the same plate, along with the upper flattened stone used with it. A rude representation of a head, most nearly resembling that of a turtle, is carried in front; the hinder part narrows a little. It is $23\frac{1}{2}$ inches long, 11 inches wide at one end, 10 at the other, and stands $6\frac{1}{2}$ inches high in the middle. It was still in use for grinding chocolate when first obtained. Forms similar to these two are commonly employed today in Central America for grinding maize, and now and again are met with amongst the peasantry in Jamaica. Two allied specimens are referred to in the "Latimer Collection" (p. 376); and one from Nicaragua, closely resembling the first mentioned Jamaican specimen, is figured in Bancroft's, "Native Races of the Pacific States," Vol. IV., p. 61.

CHAPTER IV

POTTERY

From the various caves have been obtained the best and most perfect representatives of the ceramic art of the Jamaican aborigine. Although quantities are known from the kitchen-middens, it is only in a fragmentary condition. Both the mounds and the caves however yield the same type. Eight nearly perfect

vessels were obtained by the Rev. W. W. Rumsey from the Richmond Hill cave, and odd ones have been secured from others; while it appears that many have been removed in the past, and either broken or dispersed.

The quantity of fragments to be met with in such a cave as that on the California estate, demonstrates that the number of vessels originally located in the ossuaries must have been considerable. The Halberstadt cave, containing so many bones, yielded however, only two small vessels. The most typical forms are shown on Plate V.

[38] The vessels present but little variety or elaboration of form, though all are well and more or less regularly shaped. They are, with one exception, somewhat shallow, oval or circular in outline, and often the upper part is turned inwardly; the base is convex or rounded. Two fragments from Norbrook appear to have formed the flattened circular base of two vessels. Even if this interpretation be correct, a flattened base must be regarded as very exceptional. The symmetry of the parts to any axis is not always well maintained; the distortion, however, may be the result of the imperfect methods of burning, and not of manufacture. One vessel, obtained by Mr. Ramsey from the Dallas Castle cave, is very much deeper than the others, forming nearly a complete sphere. It is of quite a distinct type and made of much coarser material.

The handles are either luted on, or are formed as a prolongation of the ends. In the great majority the border is thickened, or strengthened by the addition of a flattened fillet or band of clay.

The surface of some is very smooth or even polished, evidently by rubbing with a suitable implement; others, again, show the construction marks left on the soft clay. Many are of a dirty reddish earthy colour; one or two are yellowish; most are, however, darkened or blackened by use, showing evidence of contact with fire in having patches of carbon still upon them. In no case is there any trace of a glazed surface, but occasional suggestions of some paint or colouring material having been used are presented.

Dimensions. The dimensions of the vessels vary considerably, some of them being very large. A nearly complete portion of a circular basin, obtained from the caves in Vere, corresponds with a diameter of about 18 inches. As the thickness is only a quarter of an inch it is evident that to construct a vessel of such magnitude must have required considerable skill. The larger fragments from the California cave give indications of vessels of similar magnitude. Some perfectly flat fragments are very thick, often an inch or more, and are made of the coarsest materials. It seems likely that they served as cooking slabs or plates.

Manufacture. As usual in West Indian and American ancient pottery no evidence of the potter's wheel having been used in the manufacture is apparent. The vessels appear to have been constructed by building up separate bands of clay, and then smoothing the surface.

The material employed is nearly always coarse. Pulverized or decomposing

volcanic rock, so abundant in many parts of the island, is mixed with the clay in large proportions. Only occasionally do any of the fragments effervesce with acid, showing that few free calcareous particles are present. The vessels were no doubt baked in a fire; but there is no appearance of fusion of the materials.

Ornamentation. The ornamentation of the vessels is mostly of a simple character, in none is there any attempt at any pattern of curved lines. In many merely indented lines or dots, or combinations of the two, were made upon the surface by some stylus, while the clay was in a soft condition; often the lines are deeply hatched. In others there is a projecting rim or fillet where the upper part of the vessel becomes turned in. This is strongly indented, becoming crenate in the basin represented in Figure 6, Plate V. A flattened fillet may form a zigzag or chevron pattern. The handles exhibit the furthest attempt at ornamentation. Some of the best of these are among the material from the Norbrook and the Cranbrook kitchen-middens. See Plate III, opposite, and Figure X.

The general characters of the Jamaican aboriginal vessels may be briefly summed up as follows: Circular or oval in outline; generally shallow, with an inturned upper part; nearly always rounded at the base; margin often thickened by an additional fillet of clay; handles either luted on or formed as a prolongation of the ends, generally simple in character, but with gradations leading up to more ornamental types; occasionally perforated at the handles for suspension; ornamentation, with exception of the handles, limited to dots, straight indented lines, and fillets; surface unglazed, blackish, dirty red or yellow in colour, often with construction or smoothing marks upon it; clay varying in fineness, and generally mixed with pulverized siliceous minerals.

A few representative examples of the Jamaican pottery, along with other objects, were sent to Prof. O. T. Mason for his valuable opinion, and for comparison with the large American and West Indian collections under his charge at the Smithsonian Institution. He has kindly replied as follows: "I have today examined with great care the specimens you sent me and give you the benefit of the study. The fragments of pottery lie [39 is Plate III] [40] between the Porto Rican and that of Florida to Carolina. The angular margin (such as is shown in Figures 1 and 3 in Plate V) is found in Porto Rico and Florida; in Porto Rico there is more elaboration of design culminating in the labyrinth.

The Jamaican heads are possibly of parrots, with outspread wings; the Porto Rico handles are of monkeys and men, very boldly executed. No such handles are now in the Florida collection. On the whole Jamaica seems to be a connecting link between Porto Rico and Florida."

Uses. The uses to which the Jamaican pottery was put were no doubt mainly in connection with the preparation of food and other domestic functions, much of it showing the blackening produced by fire. The fragments obtained from the kitchen-middens must be regarded as discarded broken examples, no longer of any service.

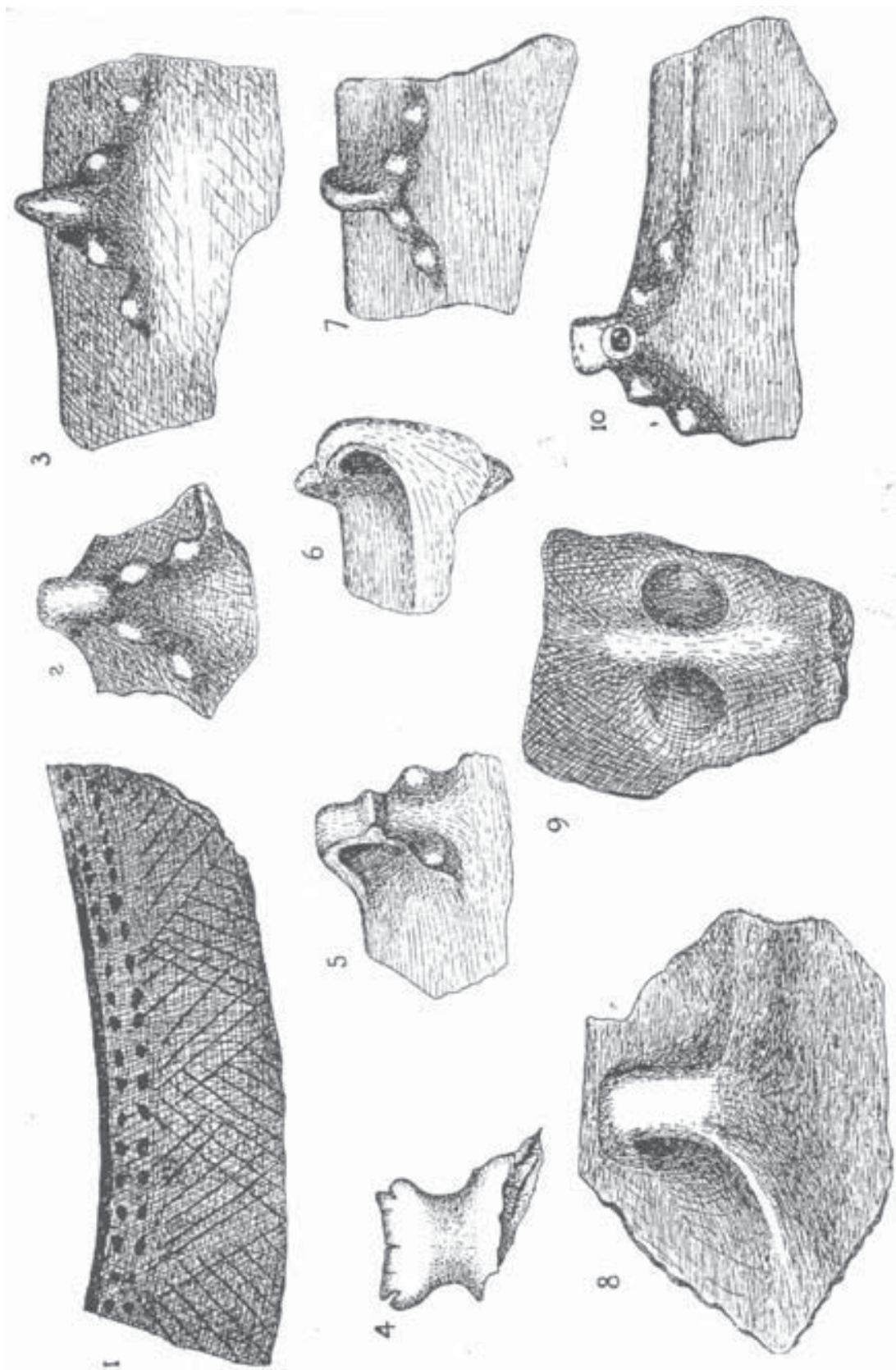


Plate III. Types of handles and ornamentation on Indian pottery.

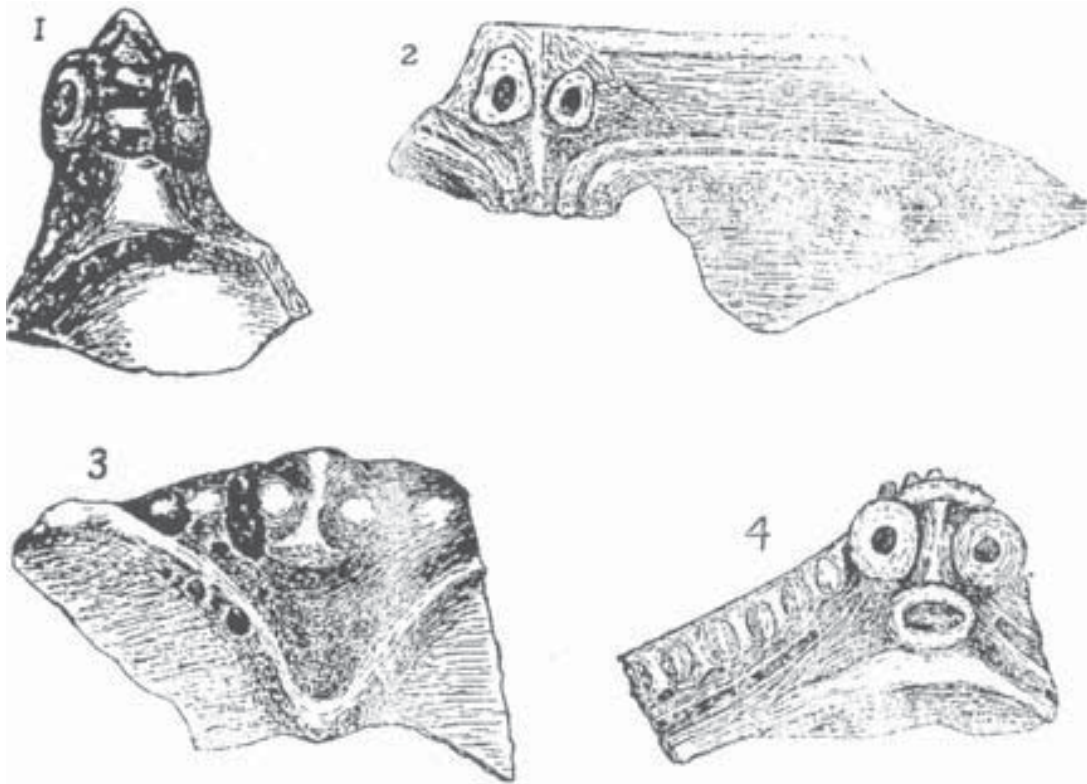


Fig. X. Ornamental handles on fragments of vessels, 1, 2, 4 from Cranbrook; 3, from Norbrook.

Some of the larger specimens met with in the caves probably represent mortuary vessels, more especially for the heads. From both Goat Island and Richmond Hill caves a vessel was obtained with the skull still inside. These two (Figure 5, Plate V and Figure 1, Plate VI) are certainly the most perfect and most ornamental of the vessels now left us. The smaller receptacles, incapable of holding skulls, no doubt contained the food and water placed along with the dead, as is so often the custom amongst uncivilized or partially civilized people, and of which we have some historical evidence from the contemporaneous Spanish writers as to its prevalence amongst the Indians of the Antilles (see Ling Roth, 1887, p. 277).

Other West Indian Islands

With regard to the condition of aboriginal pottery in other West Indian islands it is evident that it had reached a somewhat higher stage in ornamentation than that now obtainable for study in Jamaica. Dr. Mason thus refers to the pottery in the "Latimer Collection," from Porto Rico (p. 372 and Figures 1–9): "There is not an entire vessel in the collection, all of the specimens being fragments of variously shaped, coarse, red pottery, well baked, one or two pieces being glossy

on the surface. Nearly all of the ornamentation is produced by animal forms luted on. The most of these are monkey heads adorned with scrolled, circular, and fluted coronets, and by deeply incised lines, often forming very ingenious patterns. Others bear human faces, all grotesque, and the figures of mythological animals. In one of them a W-shaped wreath or festoon is luted on the outside." Somewhat similar ornamental designs, likewise obtained from Porto Rico, are figured from the "Guesde Collec-[41]tion" (Figures 209–214). Pieces of pottery brought from Navassa, a small island between Hayti and Jamaica, by the late Dr. Gayleard, are in the Museum collections. A few are figured in the *Journal of the Institute*, September 1894 (Figures ii, iii, v, Plate facing page 70). They bear a much closer resemblance to the pottery of Porto Rico, than to the Jamaican specimens.

In a paper by Prof. W. H. Holmes on "Caribbean Influence on the Prehistoric Ceramic Art of the Southern States" (1894), the author attempts to show that the decorative art of the mainland was strongly influenced by the art of the Caribbean [The term Caribbean, as used in this paper by Prof. Holmes, refers to the culture province, and not to a particular stock of people.] islands, although no evidence is forthcoming that the Caribbean peoples had originally belonged to or had taken permanent possession of the Florida-Georgia region. He states that "among the remains of the region, as far as I know, no single implement or article of sculptured stone of strictly Caribbean characters has been found." He further remarks (p. 74): "The most striking characteristics of the West Indian decorative designs are complicated groupings of curved and broken lines and the filling in of areas and interspaces with concentric circles and angular figures." Such designs occur on ancient vases found in Florida. From the islands the examples are taken from the wooden stools of Turk's Island. Prof. Holmes further adds "that there is hardly a conventional linear design on the whole series of carved wood and stone articles derived from the Antilles and attributed to the Caribs that cannot be closely duplicated in the ceramic decorations of the Florida-Appalache province." Though the Jamaican pottery bears no evidence of curved lines, the patterns on the metate (Plate IV) and on the images, though less complex, have some similarity to the designs referred to.

In connection with the pottery of Hayti, Mr. H. Ling Roth in the "Aborigines of Hispaniola" (p. 283) writes: "Pottery was a well developed art amongst these people, for collectors seem to be able to find fragments marked with the images peculiar to the Indians of this part of the world," and adds that Herrera speaks of their "earthenware pitchers handsomely made and painted;" and that, "According to Benzoni, the cacique's bread was baked in a round pipkin, and they used also large jars or vases and pipkins in the manufacture of their wine," and he also refers to their idols being made of clay. Angleria mentions special pots for cooking iguanas.

British Guiana

Of the pottery now manufactured by the Indians of British Guiana we learn from Mr. im Thurn (1883, p. 274) that the clay vessels are all of a few very simple and unvaried forms, and are formed by hand alone. After the vessel has been shaped, it is smoothed and polished by much rubbing with a waterworn pebble—or, if it can be had, an old Indian stone axe-head. After the polishing, it is dried in the sun, and finally slowly baked over a fire. The four types figured—the buck-pot casiri-jar, goglets, and sappoora—examples of which were also lent by the Demerara Museum to the Anthropological Exhibition—have no resemblance to any of the known Jamaican aboriginal forms.

Fragments of ancient pottery, discovered some time ago from a deposit in British Guiana, containing also fish and human bones, are described by Mr. im Thurn (“Timehri,” Vol. III, 1884, p. 123), who mentions “artistically wrought grotesque figures, heads, faces and whole bodies of men and other animals, which have evidently been, in some few cases still are, luted on to the vessel by way of ornament and handle combined.”

Mr. J. J. Quelch (“Argosy,” Demerara, April, 1894) has, from another locality, Mon Repos, obtained similar pottery with remnants of fish bones and human skeletons. These were lent to the Museum Exhibition, and are considered to belong to a class of people whose pottery was characterized by an artistic finish quite unlike, and indeed superior to, anything of which the modern Indians give evidence.

It would thus appear that this method of fashioning ornamental handles on pottery, in the shape of faces and often the whole body of man and other animals, was very general amongst the aborigines of the West Indies and British Guiana, but that these yet discovered in Jamaica indicate that the native artist had not attained to the elaboration of the complex designs found elsewhere.

[42]

CHAPTER V

IMAGES AND AMULETS

The two specimens shown in Figures 3 and 4, Plate IV, belonging to the Hon. D. Campbell, Linstead, were brought to notice by the Hon. Wm. Fawcett, and were lent by the former gentleman for exhibition. They were obtained while digging a yam hill on the property of Riverhead, near Ewarton, in St. Thomas ye Vale, and when found were enclosed in an earthenware vessel, which, unfortunately, fell to pieces upon being struck by the hoe. Both specimens are per-

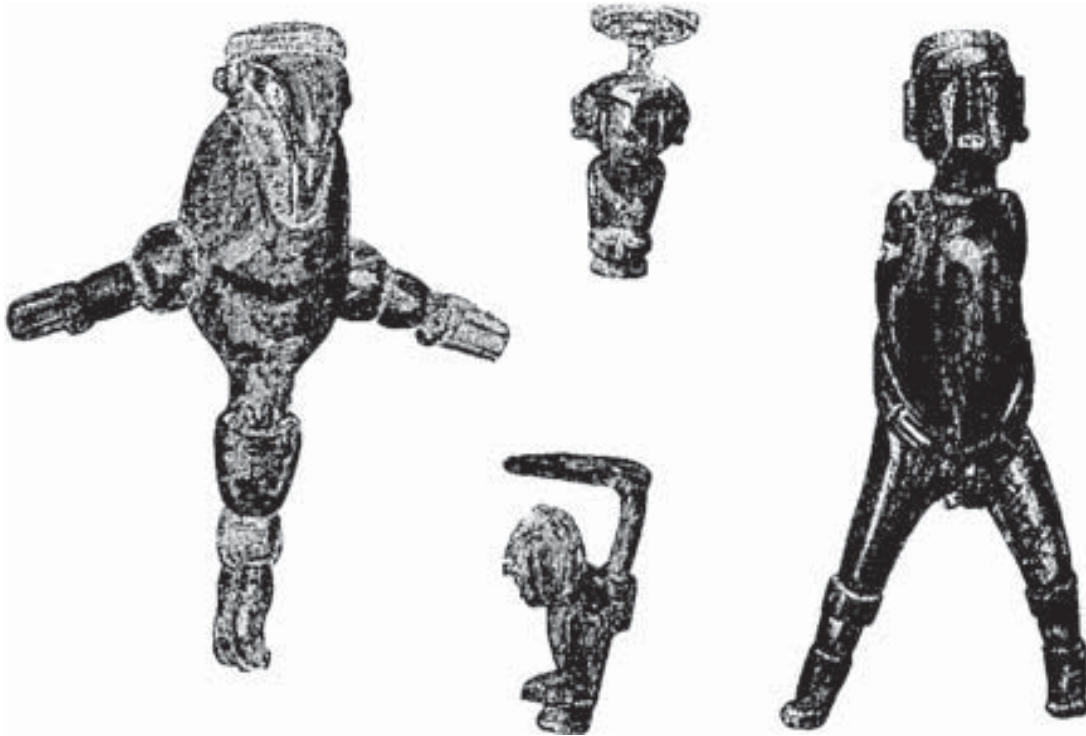


Fig. XI. Jamaica wooden images in the British Museum.

fect, and show a considerable development of ornamental stone carving. They represent a more elaborate head on a plain, truncated, conical body, terminated by a flat base. The largest is 6 inches high and $3 \frac{1}{4}$ inches across the base. It is formed of a rather coarse sandstone, with a dark brown, external colouration or patina. Originally the surface must have been very smooth, if not polished; but, evidently as a result of the burial for a long period in the earth, it is now minutely pitted and roughened. A distinct groove separates the body, about half an inch from the base, into two very unequal parts.

The ears do not project much, the eye cavities are large and circular, and, along with the open mouth, were evidently hollowed out by a process of grinding not by chipping; the forehead and nose are conjointly represented by a triangular area. Of special interest is the fact that the head is surmounted by a double flat crown, the two halves of which, separated by a deep groove, show an ornamental folded pattern. A curious account, from Peter Martyr, is given below, in reference to children in the King's village sometimes being born with a double crown, for which exceptional feature a particular Zeme was regarded as partially responsible.

The other specimen is somewhat smaller, measuring $4 \frac{3}{4}$ inches in height and $2 \frac{1}{2}$ inches across the base. It is made of a close-grained mass of fossil coral, of a considerable degree of hardness, and obtained, no doubt, from the

limestone rocks in the island. The surface was much smoother originally, and has now a mottled white and brown patina.

The ears are prominent, bearing a large non-perforated, lower lobe, and present an ornamental folded pattern of the same type as that exhibited on the crown of the first described specimen. The eye and mouth cavi-[following unnumbered page is Plate IV] [43]ties are also of the same character; but the former are smaller, oval in shape, and bear a projecting rim, while the latter is large, with a sub-marginal groove. A narrow groove above may perhaps be intended to distinguish a flat covering or crown to the head.

The specimens have each a flat base, and show no evidence of having been used as pestles; indeed the coral and sandstone are scarcely of the necessary hardness.

The faces may be compared with that on the stone stool or chair figured on p. 827 of the "Guesde Collection," the eyes, mouth, and ears having much in common.

One finds it difficult to discriminate between such carved figures as to whether they should be regarded as images or pestles. Comparing these two objects with the one represented in Figure 1 on the same Plate, there is much similarity in design and execution. The latter, however, is rounded at the base, as if it had been employed for pounding, while the former are flattened.

Wooden Images

In the last number of the *Journal of the Institute* (1896) is a facsimile, reproduced on the previous page, of an engraving in "*Archaeologia*" (1803) of three Jamaica wooden images in the British Museum. With regard to these the Editor supplies the accompanying details; "In 1799 they were exhibited at the Society of Antiquaries, London, and the following account appears of them in the Appendix to '*Archaeologia*' Vol. II, 1803, p. 269."

April 11, 1799

"Isaac Alves Rebello, Esq. F.A.S., exhibited to the Society Three Figures, supposed to be of Indian Deities, in Wood, found in June 1792, in a natural cave near the summit of a mountain, called Spots, in Carpenter's Mountains, in the parish of Vere, [Carpenter's Mountain is now included in the parish of Manchester, created in 1817.] in the island of Jamaica, by a surveyor in measuring the land. They were discovered placed with their faces (one of which is that of a bird) towards the East."

The wooden carvings are extremely interesting when compared with two existing in the "Guesde Collection" (1885, Figures 203–205). One of these



Plate IV. Images, pestles, and mealing-stones. 1, pestle (image?) with rounded base; 2, pestle (image?) with flattened base, from Vere; 3, image formed of fossil coral, from near Ewarton; 4, image with double crown, formed of sandstone, from near Ewarton; 5, tripod metate or mealing-stone, with upper-stone still in use for grinding chocolate; 6, tripod metate or mealing-stone with incised ornamentation, and with oval and spindle-shaped upper-stones.



Fig. XII. Wooden carving in the "Guesde Collection," (copied from the Smithsonian Report, 1885, fig. 204, p. 831).

is reproduced in Figure XII, from which it is seen that the essential characteristics in those from the two islands are exactly alike. The most distinguishing feature is the circular constrictions on the legs and arms. Figure 20 in the paper referred to, shows the high back of the chair ornamented with scrolls and concentric rings, but the figures of the Jamaican examples are not sufficiently clear to determine whether any such ornamentation occurs on them. In Dr. Chanca's letter, describing part of the Second Voyage of Columbus, is given a reference (1870, p. 30), to the habit of the natives of Guadeloupe (Ayay, Turuquiera) of wearing bands on their legs: "We were enabled to distinguish which of the women were natives, and which were captives, by the Caribbees wearing on each leg two bands of woven cotton, the one fastened round the knee, and the other round the ankle; by this means they make the calves of their legs large, and the above mentioned parts very small." In Irving's *Columbus* (Vol. I, p. 199) is another notice, quoted also by Mason, of the natives of Santa Cruz wearing similar bands on the arms and legs. The constrictions on

the arms and legs of the carved images are significant of this custom; while, in the quotation from Peter Martyr, given below, mention is made of the Indians fashioning their Zemes of wood, as well as of other material.

[44]Amulets

In 1879, Mr. C. P. O'R. de Montagnac discovered two small stone images on some recently disturbed ground at Rennock Lodge, situated on a small plateau at a height of about 400 feet up the Long Mountain. They were associated with accumulations of marine shells and fragments of pottery, such as are met with on the top of the hill at Weireka. The larger (Figure XIII) is a neatly carved representation of a human head and neck, and is perforated behind for suspension. It is $2\frac{3}{4}$ inches long and $1\frac{5}{8}$ inches from ear to ear; the body below the

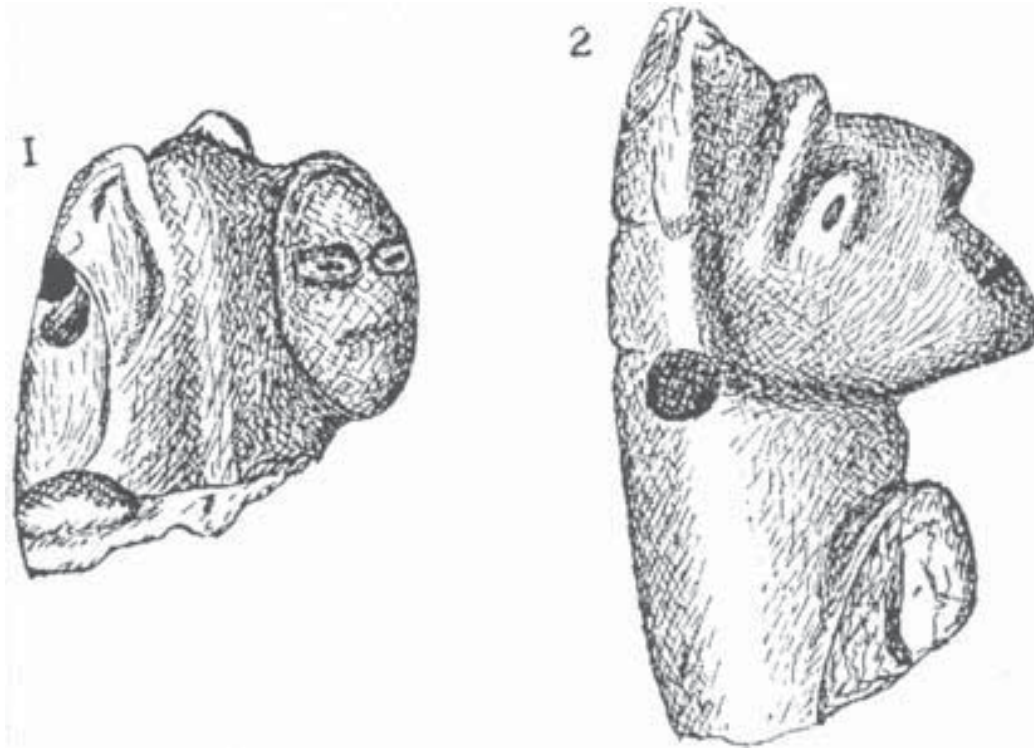


Fig. XIII. Marble amulets, from the Long Mountains.

neck has been broken off. The material is a soft crystalline limestone, scratching readily with a knife, and forms a marble of a greyish or slightly greenish colour, such as is found in various parts of the island, especially at the eastern end. The upper part of the head bears some resemblance to that figured in "Flint Chips," p. 227, Figure 6, occurring on the top of a carved stone pestle found in Hayti. The nose, chin, eyes, and ears are clearly distinguished; the perforation is $\frac{1}{4}$ inch in diameter and extends for $1 \frac{1}{4}$ inches through the upper part of the back of the neck.

The smaller object is $1 \frac{1}{4}$ inches long, and is likewise incomplete below. Though made of the same kind of stone the figure is of a different shape, the facial characters not being well pronounced. It is broken at the sides, but there is a suggestion that arms were represented, raised high at the shoulders, such as is shown in the "Latimer Collection," Figure 32.

The two are undoubtedly of the same type as those figured (figures 32–34) as amulets in the "Latimer Collection" from Porto Rico. Especially does the smaller Jamaican specimen agree with figure 32, which is a small kneeling figure made of white marble. The arms and legs are represented as pinioned back, and the shoulder-blades are perforated for suspension.

Similarly with the Amulets in the "Guesde Collection" (p. 739): "The prin-

cipal amulet is of carbonate of lime in bladed crystallization. It represents a *maboya* (evil spirit) with bended arms and legs, and the virile organ in a state of action. The shoulders are pierced posteriorly to allow of suspension of the amulet.”

Owing to the broken imperfect state of the lower portions of the Long Mountain specimens, and considering the conditions under which they were discovered, washed out of the earth associated with a refuse-heap, there can be little doubt in regarding them as amulets discarded by the aborigines, because broken. The Long Mountain, even at different levels, was evidently a thickly populated locality in pre-Columbian times, and further examination may yield additional important results.

These two objects, so far as the Museum collections show, are the only ones belonging to this group of aboriginal relics hitherto found [45] in Jamaica; though, as quoted above, somewhat similar examples are known from other parts of the West Indies. They were probably worn or carried about the person and intended to act as charms or preservatives against evil or mischief. That the Indians were accustomed to wearing such objects for this purpose is recorded by various writers. Peter Martyr (Dec. 1, lib. ix., pps. 50–54) gives a long account of the worship and superstition of the inhabitants of Hispaniola (Hayti), which we may assume to be very much the same as those of Jamaica. The following extracts (*italics added*) relate to their images: “they make certain images of Gossampine cotton. . . . These images they make sitting muche like unto the pictures of spirits and devilles which our painters are accustomed to paint upon walles. . . . These images the inhabitauntes call *Zemes*, whereof the leaste, made to the likenesse of young devilles, *they binde to their foreheads when they goe to the warres against their enemies*. . . . Of these, they believe to obtaine raine, if raine bee lacking, likewise faire weather; for they thinke that these *Zemes* are the mediators and messengers of the great God. . . . divers of the inhabitantes honour *Zemes* of divers fashions; some make them of wood; other. . . . make them of stone and marble. Some thay make of rootes. . . . They say also, that in the kinges village there are sometime children borne having two crownes, which they suppose to be the children of *Corochotum* the *Zemes*.”

CHAPTER VI ORNAMENTS

Close investigation of the cave earth at Richmond Hill has yielded to Lady Blake, Mr. Rumsey, and the writer, a collection of thirty-two small examples of the shell of *Oliva reticularis*, Lamk. (Figure XIV). They are all artificially per-



Fig. XIV. *Oliva reticularis*, Lamk.

forated through the dorsal portion of the body whorl, a little distance from the anterior (mouth) end, apparently for the purpose of being strung together, as if to form a necklace or armlet. At the place of perforation the shell has been made thinner by grinding, in some cases with a convex implement, in others by rubbing on a smooth plain surface; or, again, by being deeply and narrowly notched with some sharper implement, such as a piece of flint. An irregular hole, varying in size, has then [been] made at these thinner, weaker places, through which a string could easily be passed and then out through the mouth of the shell, and thus all could be strung together as a necklace. In no example has the perforation been made by drilling. Another feature is that in every case the spiral portion of the shell has been broken off at the last suture, so that only the body whorl remains. This is stated to happen accidentally with recent shells; but, from the rugged chipped edge presented in the remains under consideration, there can be little doubt that it was produced artificially. Perhaps it may have been effected to lighten the weight of the shells as their thickness makes them somewhat heavy.

Oliva reticularis is very common around the shores at the present day. With regard to its appearance in the fresh condition, Mr. Vendryes observes: "A magnificently coloured and polished species, white with pink or chestnut zig-zag longitudinal markings and fasciculi around the suture; sometimes there is a bluish tinge through which the white ground shines, and which much enhances the beautiful appearance of the shell. One could hardly imagine a more gorgeous and striking object than necklaces made of these shells and worn on the dark skin of the Indian."

As now obtained, after such a long interval, from amongst the earth covering the floor of the cave, the shells have lost all the original beauty of their bright enamelled [46] surface, having only a dull, dirty brown patina. Of specimens sent him, Prof. Marson writes: "Many of the ground *Oliva* are found in both continents, and I have thought that the curiously rolled tin pendants of our Indians were copied from this peculiar shape of bead."

Three large perforated shells, obtained from the Halberstadt cave, are of a different type, though evidently used for personal decoration. Two, *Fasciolaria tulipa*, Linn., and *Triton (Gymnatum) femorale*, Linn., are large marine shells, very common among the West Indian islands; while the third, *Helix (Parthena) jamaicensis*, Chemn., is a terrestrial form restricted to Jamaica. Unlike the *Oliva*, these shells are perfect with the exception of the artificial perforation, which in each case is small and of a different character from that met with in the shells of the refuse-heaps. Of the *Fasciolaria tulipa* Mr. Vendryes notes that

the varieties are numerous and all showy, and that it has been met with only on one or two occasions in the kitchen-middens which have been examined in Jamaica, so that the aborigines did not appear to have used the animal for food; indeed it is too coriaceous to make this probable. The perforation is incomplete, but is interesting as showing that, at any rate in this particular example, it was executed by some drilling tool. The hole is perfectly conical with smooth sides, in contrast to the irregular edges of the *Oliva*, and there is no preliminary wearing away or thinning of the shell to facilitate the perforation.

The fresh colour of *Triton femorale* is brown, with white ribs, which, with the well-marked varices and peculiar form of the shell, give rather a striking appearance, and would render it a desirable object for ornamentation. The hole was made through one of the thinnest parts of the body whorl.

Helix jamaicensis, from Mr. Vendryes's researches, is not found in the eastward parts of the island, but occurs in the central, mountainous districts. It was probably taken to Halberstadt, from Manchester or Upper Clarendon. The shell is a handsome one when fresh, being dark brown, with one, two, or three white zones on the body whorl. The perforation is quite small with smooth edges, as if bored. For purposes of ornamentation, and as articles of exchange amongst partially civilized tribes, it is to be noted that marine shells are mostly used in preference to land shells, by reason of their much greater hardness and durability; those of the pulmonates being generally thin and fragile. The shell of *Helix jamaicensis* is, however, a good sized, rather thick type.

Numerous references are given by the early Spanish writers to the dress and ornaments worn by the aborigines of the West Indies, at the time of discovery by Columbus.

In regard more especially to the use of marine shells as ornaments by the natives of Hayti, Benzoni, as translated by Smyth (1887, p. 263) states (*italics added*): "When the cacique of *La Espanola* wished to celebrate a feast in honour of his principal false deity, he commanded all his vassals, both men and women to come to him on a certain day. . . . the men painted black, red, and yellow, with plumes of parrot and other feathers, *with ornaments of sea-shells round their necks, their legs and their arms.*"

Accounts are given in the discoveries of the relics of the North American Indians of the occurrence of shells, also first ground down and then pierced with a hole in the lower part for the purpose of stringing them. Mr. Stevens in "Flint Chips" (p. 445–7) refers to a deposit of Indian relics in Illinois, described by Mr. Rau, amongst which was about a bushel of small fossil marine univalve shells partly pierced and belonging almost entirely to the genus *Conoculus*. "On close examination I found that these shells had been reduced, by grinding to greater thinness at the place of perforation, in order to facilitate the process of piercing."

Calcedony Beads

In the Museum collections is a string of twenty flattened calcedony beads or discs, obtained by the Hon. Wm. Fawcett and Mr. De la Haye from a deposit of aboriginal remains at Vere, Clarendon (see page 15). The beads were discovered in 1880, while holes were being dug in a cane piece. Lady Blake also possesses another series obtained in Jamaica, and Mr. De la Haye states that there were in the same place numerous pieces of partially worked stone and other incomplete beads. The two groups are figured in the Journal of the Institute, August, 1894, and one series is again shown on Plate VI. Calcedony, arranged in layers, occurs naturally in various places in the Tertiary limestone of the island. [Followed by unnumbered Plate V] [47] The beads differ in length, some being only mere discs $\frac{1}{6}$ of an inch in thickness, while the longest are $\frac{1}{2}$ an inch. They vary in diameter from $\frac{3}{8}$ to $\frac{5}{8}$ of an inch, and are beautifully rounded and polished. The drilling, except in the thinnest, has been effected from both flattened ends, meeting near the middle, often at different inclinations. The size of the holes is very variable. Considering the hardness of the material, and the well finished shape and surface, the perforations must have required a large amount of time and expenditure of energy to produce, remembering the rude implements employed in the execution.

In the "Latimer Collection" from Porto Rico, Prof. Mason describes (p. 378) "A string of seventy small chalcedony beads, about the size of peas. They are quite perfectly rounded and perforated—some of them in two directions. This is the most remarkable sample of aboriginal stone polishing and drilling that has ever come under the observation of the writer. It is exceedingly doubtful whether another collection of so many witnesses of savage patience and skill has been found anywhere in one specimen."

He further reminds one of the "eight hundred beads of a certain stone called *ciba*, given by Guacanagari to Columbus on his second voyage," which are mentioned by Herrera, and on which the Indians set great value. Numerous other references occur, in the contemporaneous Spanish writers, to the dress and ornaments worn by the natives of Jamaica, and of the West Indies generally, at the time of their discovery by Columbus. Several are given of the use of strings of variously coloured beads.

In the account by Bernaldez of the Cacique and his party who visited Columbus when he was obliged to shelter in Old Harbour Bay, on his second visit to Jamaica, in July, 1494, we have a description of the full regalia of the Cacique, and of the dresses of his wife and daughters.

The account, translated by Irving (Life of Columbus, '88 Ed., p. 276) is as follows (*italics added*):

"Around his head was a *band of small stones of various colours*, but principally

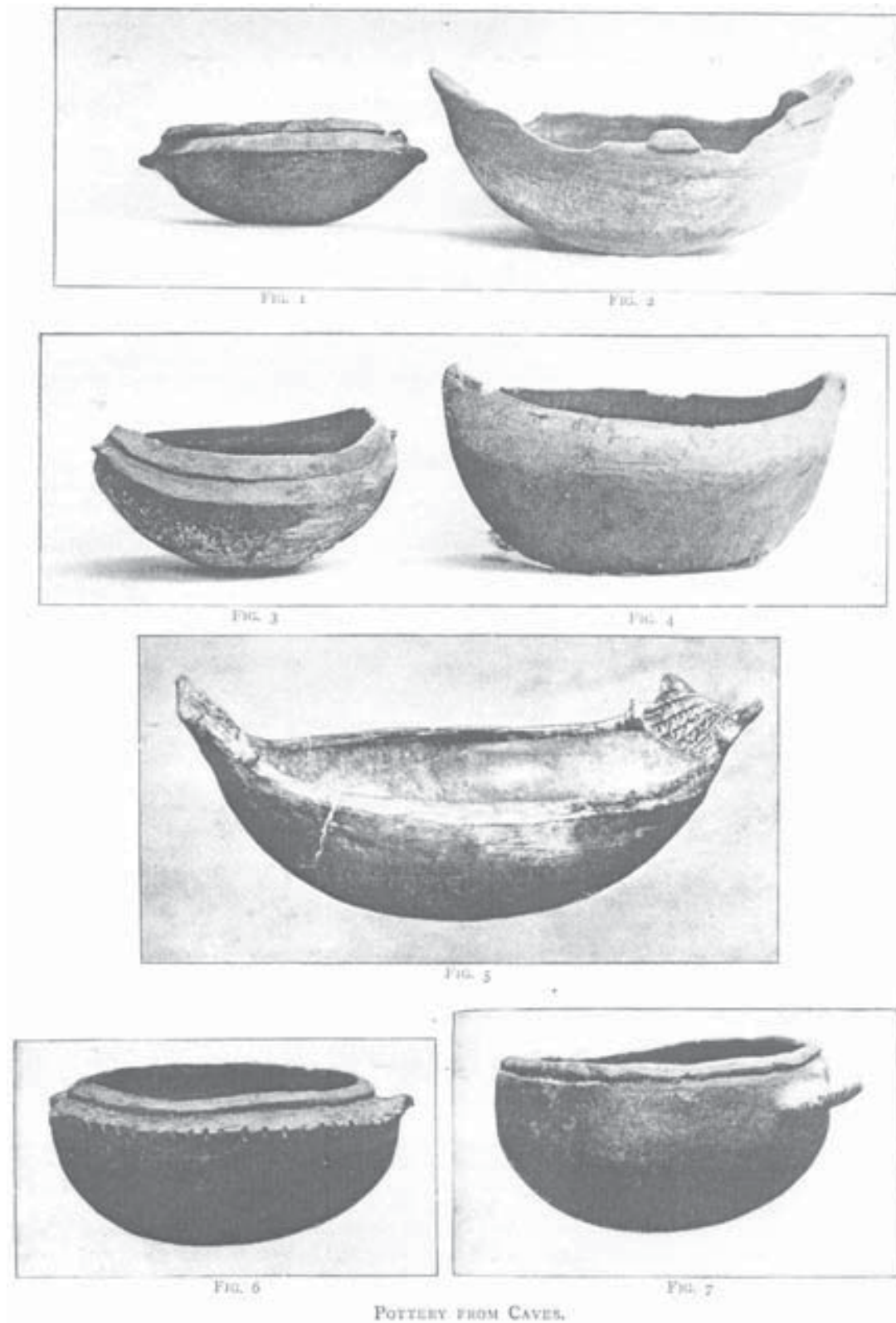


Plate V. Pottery from various caves

Figures: 1, Halberstadt. 2, Vere. 3, Pedro. 4, Negril. 5, Goat Island. 6 and 7, Cambridge Hill.



Fig. XV. Quartz ornament, from Cranbrook.

green, symmetrically arranged, with *large white stones* at intervals, and connected in front by a large jewel of gold. Two plates of gold were suspended to his ears by rings of very small green stones. To a *necklace of white beads*, of a kind deemed precious by them, was suspended a large plate, in the form of a fleur-de-lys, of guanin, an inferior species of gold; and a *girdle of variegated stones*, similar to those around his head, completed his regal decorations. His wife was adorned in a similar manner, having also a very small apron of cotton, and bands of the same round her arms and legs. The daughters were without ornaments, excepting the eldest and handsomest

who had a *girdle of small stones*, from which was suspended a tablet, the size of an ivy leaf, composed of *various coloured stones*, embroidered on network of cotton."

It is recorded that Columbus received from the Haytians on one occasion 605 pieces of jewelry of various colours. "Among the 605 pieces of jewelry were eight strings of small beads made of white, green and red stones, one string of gold beads, one regal crown of gold." (1887, p. 276).

A perforated cylinder or bead from Bar-[48]bados, lent to the Exhibition by the Rev. T. W. Bindley, is 2 1/4 inches in length, and perforated right through by a hole about 3/4 of an inch in diameter.

The small piece of worked quartz, represented in Figure XV, was found by Mr. Townsend in the refuse-heaps at Cranbrook (p. 20). It resembles the centra of two contiguous vertebrae, and is, no doubt, to be regarded as an ornament.

The object shown in Figure XVI, and obtained from Vere deposits (p. 15), is generally regarded as a "sinker" for fishing apparatus, the perforation enabling it to be suspended.

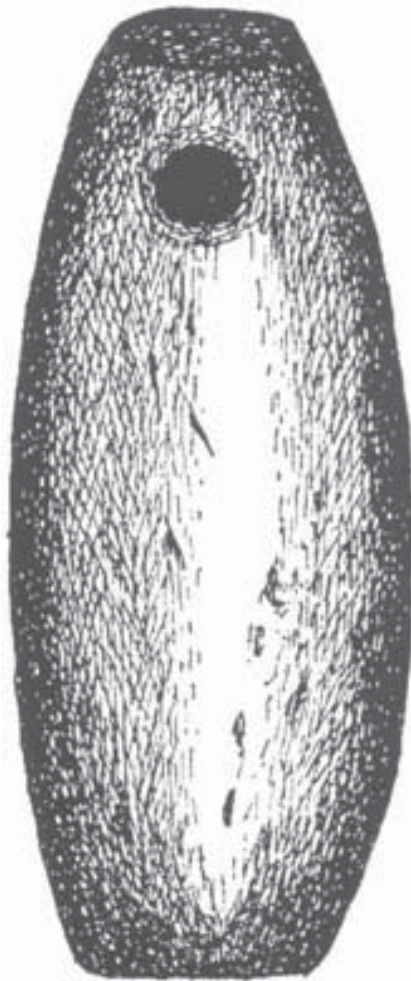


Fig. XVI. Perforated spindle-shaped stone, "sinker," from Vere.

CHAPTER VII

ROCK-CARVINGS OR PETROGLYPHS

With the assistance of Mr. J. F. Brennan, Public Works Department

[The term Petroglyph is restricted by Mallery (1893, p. 31) for productions in which "the picture, whether carved or pecked, or otherwise incised, and whether figured only by colouration, or by colouration and incision together, is upon a rock either in situ or sufficiently large for inference that the picture was imposed upon where it was found."]

Within the past year or two four examples of probable aboriginal rock-carvings, all previously unrecognized, have been brought to public notice. They occur at widely separated and remote spots, and, though rude, are without doubt of similar origin. Two, those in Trelawny and St. Mary, represent only an individual human figure, the face being the most distinct feature; others, at Kempshot and St. John, show numerous inscriptions. The former are very simple, representing only the face, while the latter exhibit more complicated designs. In every case they are rather deep incisions in the soft limestone or on stalactitic matter, and present a more or less perfect circle enclosing a face; the lower markings are less definite. Though mostly in caves or recesses, protected from the rain, the incisions or grooves show a very rough pitted surface, as if from weathering or solution extending over a long period. It is not likely, however, that the surface and edges were ever neatly made, having evidently been executed by some implement not well adapted to the purpose. A comparison with others known from various West Indian islands, and from Guiana, shows there can be little doubt as to the uniformity of the whole series.

Dryland, St. Mary

The Petroglyph at Dryland, representing a human figure (Plate VI, figure 3), occurs in the parish of St. Mary, just where it borders on the parish of St. Catherine between Highgate and Pear Tree Grove. It is found in a recess at the angle of a small closed gorge, about 15 feet high, in the soft, yellow limestone. The gorge was probably at one time a river-course; a pit, evidently an old sink-hole, occurring in it.

At present the immediate district known as the Dryland Settlement, is a rugged ruinate woodland, about half a mile from the public road, and has a stream behind to the north-east. In a straight line it is distant nine miles from the northern shore of the island, and has an altitude of 1,470 feet. Well-wooded surrounding elevations give the locality considerable picturesque beauty. Numerous settlements are met with in the vicinity, but none of the oldest in-

habitants knows anything of the history of the carving. A local celebrity, over 80 years of age, and rejoicing in the name of "Prince William," remembers seeing it when a boy.

As contributing to the human likeness advantage has been taken of a vertical projection, covered with stalactitic matter, on the wall of the gorge. Upon this, deep incisions have been made to distinguish the various regions of the body; a circular one marks the extent of the face, and others the eyes, nose, and mouth. Incisions are further found in various places below; but are not of sufficient definiteness to allow of their import being accurately determined, the face [49] being the most characteristic portion. A receding area above the face is probably only a part of the original natural form of the projection. A fractured surface on one side may represent where an arm has been broken off. The body terminates inferiorly much like the surrounding stalactitic covered projections. The total length is 5 feet 6 inches, the length of the face 14 inches, the diameter of the circular eye sockets $1\frac{3}{4}$ inches, the distance between their centres 3 inches. The depth of the grooves varies throughout from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch. The greater part of the surface was evidently smooth at one time, but is now, as is also the case with the surface of the incisions, considerably roughened and pitted by weathering and solution, denoting considerable antiquity.

For the photograph from which the figure is taken, and also for that on Plate VII, figure 2, the markings on the rock had been carefully traced with a charcoal pencil so as to render, in the shade, a good negative possible.

Pantrepant, Trelawny

Pantrepant is a large property in Trelawny, beyond the Good Hope estate, and belongs to Mr. A. Townend. It is on the borders of the Cockpit country, about nine miles from the sea, and 387 feet above the sea-level. In slavery days it was a celebrated sugar-estate, but is now used largely for cattle-grazing. The location of the carving is in one of the wildest and most picturesque parts of the property on the side of a hill, with the Martha Brae river running below. The white Tertiary limestone here begins to be rugged and precipitous, as in the typical parts of the Cockpit country near, and shows the result of very considerable weathering action. From the house on the property, the approach to the carving is through the old Negro village, then for some distance through ruinant pasture, and afterwards up the rugged side of a hill where one's way through the bush had to be cut in advance. The primary object of the visit, which accidentally led to the discovery, was to examine the accumulation of bones dropped on the floor of an archway in the limestone rock, from an owl's nest. The hill here is very precipitous, and a natural archway leads through a projecting portion. The abundant crevices and recesses in the sides and roof of the archway



FIG. 1—VESSEL WITH FLATTENED SKULL INSIDE,
FROM RICHMOND HILL CAVE.



FIG. 2—CALCEDONY BEADS, FROM VERE.



FIG. 3—ROCK CARVING AT DRYLAND, ST. MARY.

Plate VI. Richmond Hill, Vere, Dryland.

Fig. 1, Vessel with flattened skull inside, from Richmond Hill Cave. Fig. 2, Calcedony beads from Vere. 3, Rock carving at Dryland, St. Mary.



Fig. XVII. Rock-carving at Pantrepant, Trelawny.

are taken advantage of by numerous bats and birds; while, in one part, the ground is strewn with hundreds of skulls and bones, principally those of rats and bats, from the owl's nest overheard. Other parts of the floor are covered with bat manure, portions of which have evidently been removed in recent times. Climbing round a projecting part of the rock, a natural recess in the side of the hill is seen, on the vertical walls of which the incised carving is discovered. It is a rude representation of a human figure, about 4 feet long and 1 foot broad, with the facial part only well defined (Figure XVII). The grooves denoting the outlines of the face, the eyes, and mouth, are well marked, being nearly an inch in depth. The parts representing the eyes are directed obliquely inwards, as in the eye apertures of the Mongolian race. The edges and surface of the carving, though evidently smooth at one time, are now roughened and pitted by the solution and weathering of the limestone.

The parts below the face are not well defined; incisions, probably intended to represent arms, can be distinguished, while the slightly projecting portion of rock in which the carving is made forms a natural outline tending to complete the resemblance to the human figure.

Mountain River, St. John

The spot where these more important carvings (Plate VII) occur is reached by traveling on the St. John's road to near the 12th milestone from Spanish Town, then turning to the right through the property known as Berry Hill and pursuing a very rough and steep track over brecciated limestone, where the sharp weathered edges of the rock render walking very difficult. For a distance of about one and a half miles from the main road one descends nearly 200 feet to a spring, and then ascends to about the same height. The elevation is between 1,200 and 1,400 feet above the sea. The spot can scarcely be called a cave, a recess being formed by a huge limestone boulder which has lodged in such a manner as to form a roof over the figures. The latter are produced by deep incisions, about an inch broad and half an inch deep, in the limestone rock. They present all the appearances of age, being rough and weathered, and show no marks of any tool. The roof protects them from rain. The principal figure (Figure 2) measures four feet in height, and about one foot in breadth near the upper portion. Advantage has been taken of a projecting piece of rock to give an impression of solidity and relief. As shown in the photograph, the eyes and mouth are represented, and the face is surrounded by two parallel three-sided

incisions, producing somewhat the appearance of a thick hood. The outer incision is continued below, giving to the whole the resemblance of a shrouded human body. Other figures around are smaller and of various forms, but all more or less represent the outlines of human beings in a grotesque and distorted fashion. A fallen piece of rock, measuring about four feet cube, lies upon the ground near by, and bears similar carvings, but the figures are not so complete (Figure 1).

Kempshot, St. James

These carvings were first brought to the notice of the Institute by Maxwell Hall, Esq., M.A., Government Meteorologist, who writes as follows: "In the Homecommon of Kempshot Pen is a small cave containing some rude carvings. When I first saw them, 25 years ago, I supposed them to be 'artistic' attempts of pen-boys, past and present. The cave is at the base of a hill, and is easy of access from the pasture. The further end is covered with stalactites, on which are several rough carvings of human faces; there are eleven fairly well marked, and a few more not so distinct. Unfortunately many have, I believe, been recently mutilated by gangs of labourers, who take refuge in the cave from time to time."

Later one of us visited the spot to note and compare the inscriptions more fully and to photograph them.

Kempshot is situated about eight miles from Montego Bay, and is at an elevation of 1,600 feet above sea-level. The cave is away from the house, say 150 feet, and faces the east. The nearest spring is nearly two miles distant, but there is an appearance of an old water-course or gully a chain or two from the mouth. It is about 25 feet long by 12 broad, with an average height of 10 feet, and is a natural formation in limestone. There is a thick deposition of stalactitic material, which has become very hard. The figures are only representations of human heads, the length of the faces averaging about seven inches, the breadth five inches, and the distance between the eye centres two inches. The depths of the incisions vary from $\frac{1}{8}$ to $\frac{1}{4}$ of an inch, and are very indefinite in some. The ones distinguishing the eyes and mouth are not very deep or well marked, but those surrounding the faces are much more so. The heads are fairly upright. No trace of any other inscription is seen. There is a marked difference in the carvings, one series shows that a sharp chisel was used, but the others are blunt and much water-worn. Whether anyone in more recent times has added to some of the original figures to further embellish the cave is hard to say. There are twelve figures, and a possible thirteenth, all cut on the stalactites. The inside of the cave is sheltered, and, as it is not well lighted, the carved lines, before photographing, were rendered more distinguishable by means of



a charcoal pencil, otherwise one could not obtain a good negative. No remains of pottery were to be seen, but apparently a cavity occurs below and has become filled up by fallen stone.

Rock-Pictures



Fig. XVIII. Three of the rock-carvings at Kempshot, St. James.

A series of rock-pictures has lately been discovered in the island, associated with the petroglyphs at Mountain River, and occurring on the inner surface of the block of stone [51] constituting the recess. They are rough representations of various forms of animals,

such as lizards, birds, and turtles, between one and two hundred figures being depicted. The pigment employed is black, and can not be readily abraded. Further examination is necessary before a more detailed description can be given.

Petroglyphs in Other West Indian Islands

An important and valuable paper upon the petroglyphs of the Greater and Lesser Antilles has recently been published by M. Pinart (*Note sur les Péroglyphes et Antiquités des Grandes et Petites Antilles*, Par A. L. Pinart, Paris, 1890. Folio Facsimile of ms.) Unfortunately we have not been able to obtain a copy of this, and for what follows are indebted to the extracts given in the very elaborate work by Colonel Garrick Mallery on "Picture-writing of the American Indians" (Tenth Annual Report of the Bureau of Ethnology, 1888–89). Pinart explored a number of the islands of the West Indies but found that the neighbouring one of Porto Rico furnishes the greatest amount of evidence of development in the pictographic art. At la Cueva del Islote, on the north side of the island, are to be seen inscriptions all around. "The incisions are very deep, and the edges are generally dulled by the blows of the hammer; in certain spots, toward the lower part of the grotto, several inscriptions are partially effaced by the action of the sea, but those of the upper part are in a remarkable state of preservation. Beneath certain principal figures of the groups are little



FIG. 1

ROCK-CARVINGS AT MOUNTAIN RIVER, ST. JOHNS N.



FIG. 2

Plate VII. Rock-Carvings at Mountain River, St. Johns. 1, Incised figures on a fallen mass of rock; 2, Figures on the vertical face of a rock in a recess.

circular basin-like depressions cut in the rock with a trench running down toward the bottom. . . . The most noticeable thing in this group of inscriptions is the frequency of the grinning faces in a circle, often alone, often accompanied by two others placed at the sides, which are universally met with in every inscription found in the Greater and Lesser Antilles. The same may be said of the human figure apparently swaddled in clothes like a very young infant, the head and body more or less decorated, which is also very frequently found (p. 136)."

While in the Bahamas, Lady Blake furnished the American Bureau of Ethnology with an account and sketches of petroglyphs occurring in those islands. They are referred to in the Report above mentioned (pp. 137–9). The carvings were found in a cave on the northern shore of a small island at Rum Cay. The inscriptions are very numerous and most of them rudely represent human faces enclosed in a circle, "and the markings must have been nearly half an inch in depth, cut into the face of the rock, and seemed to us such as might have been made with a sharp stone implement." Colonel Mallery considers the petroglyphs to bear a remarkable similarity to those in British Guiana, "and the authorship would seem to relate to the same group of natives, the Caribs." The well-known slab bearing ornamental inscriptions found in Guadaloupe, and represented in the "Guesde Collection" (Figure 208), is also reproduced in Col. Mallery's Report, and its comparison with the Guiana carvings recommended. These latter are very fully described and figured in im Turn's "Among the Indians of Guiana" (pp. 389–410), and certainly, along with these others mentioned in different islands of the West Indies, bear some resemblance to the Jamaican carvings, especially to those at Mountain River. [followed by unnumbered Plate VII]

References

1605. Martyr, Peter. "The Historie of the West Indies." (Published in Latin by Mr. Hakluyt, and translated into English by M. Tok, Gent.), London [about 1605].
1707. Sloane, Sir Hans. "A Voyage to the Islands of Madeira, Barbados, Nieves, St. Christopher's and Jamaica, etc." 2 vols. Vol. II, 1725. London.
1740. Leslie, Charles. "A New History of Jamaica, etc." 2nd edition. London.
1774. Long, Edward. "The History of Jamaica." 3 vols. London.
1807. Edwards, Bryan. "The History, Civil and Commercial of the British Colonies in the West Indies." 4th edition. 3 vols. London.
1870. Major, R. H. "Select Letters of Christopher Columbus." (Translated and edited), London.
1870. Stevens, Edward T. "Flint Chips." London.

1875. Bancroft, Hubert Howe. "The Native Races of the Pacific States of North America." 5 vols. London.
1877. Mason, O. T. "The Latimer Collection of Antiquities from Porto Rico in the National Museum at Washington, D.C." *Smithsonian Report for 1876*: pp. 372–393. Washington.
1883. im Thurn, Everard F. "Among the Indians of Guiana." London.
1885. Nadaillac, Marquis de. "Pre-historic America." (Translated by N. D'Anvers, edited by W. H. Dall). London.
1885. Mason, Otis T. "The Guesde Collection of Antiquities in Pointe-a-pitre, Guadeloupe, West Indies." *Smithsonian Report for 1884*, pp. 731–837. Washington, D.C.
1887. Roth, Hy. Ling. "The Aborigines of Hispaniola." *Jour. Anthropol. Institute.*, Vol. XVI, pp. 247–286.
1888. Irving, Washington. "The Life and Voyages of Christopher Columbus." 2 vols. Vol. I, 1888; Vol. II, 1876.
1890. Flower, W. H. "Exhibition of Two Skulls from a Cave in Jamaica." *Jour. Anthropol. Instit.*, November 1890.
1890. Blake, Lady. "The Norbrook Kitchen-midden." *Victoria Quarterly*, Vol. II, No. IV. Kingston.
1893. Ober, Frederick A. "In the Wake of Columbus." Boston.
1893. Mallery, Garrick. "Picture-writing of the American Indians." *Tenth Annual Report of the Bureau of Ethnology, 1888–89*. Washington, D.C.
1894. Cundall, Frank. "The Story of the Life of Columbus and the Discovery of Jamaica." *Jour. Instit. Jam.*, Vol. II, No. 1.
1894. Ober, Frederick A. "Aborigines of the West Indies." *Proc. Amer. Antiqu. Soc.*, Worcester, Mass., U.S.A.
1894. Quelch, J. J. "Carib Remains for Pln Mon Repos." *Argosy*, 21st April. Demerara.
1894. Holmes, W. H. "Caribbean Influence on the Prehistoric Ceramic Art of the Southern States." *American Anthropologist*, Washington, D.C.
1894. Thomas, Cyrus. "Report on the Mound Explorations of the Bureau of Ethnology." *Twelfth Annual Report of the Bureau of Ethnology, 1890–91*. Washington, D.C.
1895. Flower, Sir Wm. H. "On Recently Discovered Remains of the Aboriginal Inhabitants of Jamaica." *Nature*, Oct. 17. London.
1896. "Jamaica Wooden Images in the British Museum." *Jour. Instit. Jam.* Vol. II, No. 3.
1896. Duerden, J. E. "Phases in Jamaican Natural History." *Jour. Instit. Jam.*, Vol. II, No. 3.

References Cited

- Aarons, G. A.
1983a Archaeological Sites in the Hellshire Area. *Jamaica Journal* 16(1):76–87.
1983b Sevilla la Nueva: Microcosm of Spain in Jamaica. Part 1: The Historical Background. *Jamaica Journal* 16(4):37–46.
1984 Sevilla la Nueva: Microcosm of Spain in Jamaica. Part II: Unearthing the Past. *Jamaica Journal* 17(1):28–37.
1985 Pre-Columbian Gold Disc. *Jamaica Journal* 18(1):64 (and inside front cover).
1988 Feedback: The Mountain River Cave. *Jamaica Journal* 21(3):64.
1994 The Jamaican Taíno: The Aboukir Zemis, Symbols of Taíno Philosophy, Mysticism, and Religion. *Jamaica Journal* 25(2):11–17.
- Abbott, R. T.
1954 *American Seashells*. Van Nostrand, New York.
- Academy of Natural Sciences of Philadelphia
2003 Western Atlantic Gastropod Database, Malacolog Version 3.2.4. Electronic document, <http://www.data.acnatsci.org/wasp/>, accessed March 1, 2007.
- Adams, C. D.
1972 *Flowering Plants of Jamaica*. University of the West Indies, Mona, Jamaica.
- Adelaar, W. F. H.
2000 La diversidad lingüística y la extinción de las lenguas. In *As línguas amazônicas hoje*, edited by F. Queixalós and O. Renault-Lescure, pp. 29–35. Instituto Socioambiental, São Paulo.
- Agorsah, E. K.
1994 Archaeology of Maroon Settlements in Jamaica. In *Maroon Heritage: Archaeological, Ethnographic, and Historical Perspectives*, edited by E. K. Agorsah, pp. 163–187. Canoe Press, Kingston.
- Aitken, M. J.
1990 *Science-Based Dating in Archaeology*. Longman, London and New York.

- Alegría, R. E.
 1985 Christopher Columbus and the Treasure of the Taíno Indians of Hispaniola, translated by James W. Lee. *Jamaica Journal* 18(1):2–11.
- Allgood, J. L.
 2000 Faunal Analysis of the Green Castle Estate Assemblage. Unpublished report.
- Allsworth-Jones, P., and E. Rodriques
 2005 The James W. Lee Arawak Collection, UWI, Kingston, Jamaica: Facts and Figures. *Proceedings of the XXth International Congress for Caribbean Archaeology, Santo Domingo, 2003*, vol. 1:296–305. Museo del Hombre Dominicano and Fundación García Arévalo, Santo Domingo.
- Allsworth-Jones, P., and K. Wesler
 2003 Excavations at Green Castle, Jamaica, 1999–2001. *Proceedings of the XIXth International Congress for Caribbean Archaeology, Aruba, 2001*, vol. 1:186–193. Publications of the Archaeological Museum, 9, Aruba.
- Allsworth-Jones, P., G. Lalor, G. Lechler, S. F. Mitchell, E. Rodriques, and M. Vutchkov
 2001 The Taíno Settlement of the Kingston Area. *Proceedings of the XVIIIth International Congress for Caribbean Archaeology, Grenada, 1999*, vol. 2:115–127. Guadeloupe.
- Arrom, J. J. (editor)
 1999 *An Account of the Antiquities of the Indians*, by Fray Ramón Pané, translated by S. C. Griswold. Duke University Press, Durham, North Carolina.
- Ashcroft, M. T.
 1974 Visit to Gordon Castle, Dallas, St. Andrew. *Jamaican Historical Society Bulletin* 6(8):95–97.
- Bailey, B. V.
 1970 *Jamaican Clay Deposits*. Economic Geology Report, No. 3. Geological Survey Department, Kingston.
- Bass, W. M.
 1987 *Human Osteology: A Laboratory and Field Manual*. Missouri Archaeological Society, Columbia.
- Beckford, J.
 1994 A Brief History of the Yamaye Bohio, the Rio Nuevo Heritage Center, Jamaica. *Archaeology Jamaica* (n.s.) 8:14.
- Bérard, B., and N. Vidal
 2003 Essai de Géographie Amérindienne de la Martinique. *Proceedings of the XIXth International Congress for Caribbean Archaeology, Aruba, 2001*, vol. 1:22–35. Publications of the Archaeological Museum, 9, Aruba.
- Bercht, F., E. Brodsky, J. A. Farmer, and D. Taylor (editors)
 1997 *Taíno: Pre-Columbian Art and Culture from the Caribbean*. Monacelli Press, New York.
- Bluhdorn, D., and S. D. Kaplan (editors)
 1992 *Catálogo Conmemorativo V Centenario*. Altos de Chavón, Museo Arqueológico Regional, La Romana, Dominican Republic.

- Boomert, A.
 2000 *Trinidad, Tobago, and the Lower Orinoco Interaction Sphere: An Archaeological/Ethnohistorical Study*. Cairi Publications, Alkmaar, the Netherlands.
- Brennan, J. F.
 1943 *The Rainfall of Jamaica from about 1870 to End of 1939*. British Caribbean Meteorological Service, Kingston.
- Buikstra, J. E., and D. H. Ubelaker
 1994 *Standards for Data Collection from Human Skeletal Remains*. Arkansas Archaeological Survey Research Series No. 44, Arkansas Archaeological Survey, Fayetteville.
- Buisseret, D. J.
 1967a The Fortifications of Kingston–Port Royal, 1655–1815, I. *Jamaican Historical Society Bulletin* 4(9):174–177.
 1967b The Fortifications of Kingston–Port Royal, IV: Apostles’ Battery, Rodney’s Lookout, Fort Henderson. *Jamaican Historical Society Bulletin* 4(12): 241–245.
 1968a The Fortifications of Kingston–Port Royal, VI: Fort Nugent, Martello Tower, Rockfort. *Jamaican Historical Society Bulletin* 4(15):286–288.
 1968b The Fortifications of Kingston–Port Royal, VII: Drummond’s Hill, Dallas Castle, Stony Hill. *Jamaican Historical Society Bulletin* 4(16):309–312.
 1983 Fresh Light on Spanish Jamaica. *Jamaica Journal* 16(1):72–75.
 1996 *Historic Jamaica from the Air*. Ian Randle, Kingston.
- Bullen, R. P., and A. K. Bullen
 1974 Inferences from Cultural Diffusion to Tower Hill, Jamaica, and Cupercoy Bay, St. Martin. *Proceedings of the Fifth International Congress for the Study of Pre-Columbian Cultures of the Lesser Antilles, Antigua, 1973*, pp. 48–60. Antigua National Trust and Archaeological Society, Antigua.
- Callum, B.
 2001 Old Nanny Town (Site POR 01+) Revisited: An Alternative Interpretation. *Archaeology Jamaica* (n.s.) 13:1–6.
- Carlin, E. B., and K. M. Boven
 2002 The Native Population: Migrations and Identities. In *Atlas of the Languages of Suriname*, edited by E. B. Carlin and J. Arends, pp. 11–45. Ian Randle, Kingston.
- Carlson, L. A.
 2002 Zooarchaeological Analysis of the Green Castle Site, Annotto Bay, St. Mary Parish, Jamaica. Unpublished report. Southeastern Archaeological Research, Inc., Gainesville, Florida.
 2003a Zooarchaeological Analysis of the 2002 Season of Excavations at the Wentworth Site, St. Mary Parish, Jamaica. Unpublished report. Southeastern Archaeological Research Inc., Gainesville, Florida.
 2003b Zooarchaeological Analysis of the 2002 Season of Excavations at the Newry Site, St. Mary Parish, Jamaica. Unpublished report. Southeastern Archaeological Research Inc., Gainesville, Florida.

- 2004 Zooarchaeological Analysis of the 2003 Season of Excavations at the Cole-raine Site, St. Mary Parish, Jamaica. Unpublished report. Southeastern Ar-chaeological Research Inc., Gainesville, Florida.
- Carlson, L. A., and W. F. Keegan
- 2004 Resource Depletion in the Prehistoric Northern West Indies. In *Voyages of Discovery; the Archaeology of Islands*, edited by S. M. Fitzpatrick, pp. 85–107. Praeger, Westport, Connecticut.
- Cassidy, F. G.
- 1974 Iter Boreale. *Jamaican Historical Society Bulletin* 6(8):105.
- 1988 The Earliest Placenames in Jamaica. *Names* 36(3 and 4):151–161.
- Centro de Antropología y Centro de Diseño de Sistemas Automatizados
- 1995 *Taino: Arqueología de Cuba*. CD-ROM for Windows. Universidad de Co-lima, Mexico.
- Champion, S.
- 1980 *A Dictionary of Terms and Techniques in Archaeology*. Phaidon Press, Oxford.
- Claassen, C.
- 1998 *Shells*. Cambridge University Press, Cambridge.
- Clarke, C. G., and A. G. Hodgkiss
- 1974 *Jamaica in Maps*. Hodder and Stoughton, London.
- Claypole, W. A.
- 1973 The Settlement of the Liguanea Plain between 1655 and 1673. *Jamaican Historical Review* 10:7–15.
- Coe, W. R.
- 1957 A Distinctive Artifact Common to Haiti and Central America. *American Antiquity* 22(3):280–282.
- Cohen, J. M. (editor and translator)
- 1969 *The Four Voyages of Christopher Columbus*. Penguin, Harmondsworth.
- Coppa, A., A. Cucina, B. Chiarelli, F. Luna Calderón, and D. Mancinelli
- 1995 Dental Anthropology and Paleodemography of the Precolumbian Popula-tions of Hispaniola from the Third Millennium B.C. to the Spanish Con-quest. *Human Evolution* 10:153–167.
- Cotter, C. S.
- 1946 The Aborigines of Jamaica. *Jamaican Historical Review* 1(2):137–141.
- 1948 The Discovery of the Spanish Carvings at Seville. *Jamaican Historical Re-view* 1(3):227–233.
- 1952 Notes on the Excursion to St. Ann's Bay. *Jamaican Historical Society Bulletin* 1(1):7.
- 1953 Archaeological Notes: Adstock Farm. *Jamaican Historical Society Bulletin* 1(4):48.
- 1956 The Seville Dig. *Jamaican Historical Society Bulletin* 1(13):149–151.
- 1964 The Jamaica of Columbus. *Jamaican Historical Society Bulletin* 2(16):252–259.
- 1970 Sevilla Nueva: The Story of an Excavation. *Jamaica Journal* 4(2):15–22.

- Crosby, A. W.
 1972 *The Columbian Exchange*. Greenwood Press, Westport, Connecticut.
- Cruz, L. H. (editor)
 1996 *Culturas indígenas de Puerto Rico*. Museo de Historia, Antropología y Arte, Universidad de Puerto Rico, Recinto de Río Piedras.
- Cundall, F.
 1895 Discovery of Aboriginal Indian Remains in the Port Royal Mountains. *Journal of the Institute of Jamaica* 2(2):188.
 1915 *Historic Jamaica*. The Institute of Jamaica, West India Committee, London.
 1939 A Record of Investigations into the Subject of Arawak Remains in Jamaica. Appendix to P. M. Sherlock, *The Aborigines of Jamaica*, pp. 16–20. The Institute of Jamaica, West India Committee, London.
- Curet, L. A.
 1991 Prehistoric Demographic Changes in the Valley of Maunabo, Puerto Rico: A Preliminary Report. *Proceedings of the Fourteenth Congress of the International Association for Caribbean Archaeology, Barbados, 1991*, pp. 11–24. Barbados.
 2004 Island Archaeology and Units of Analysis in the Study of Ancient Caribbean Societies. In *Voyages of Discovery: The Archaeology of Islands*, edited by S. M. Fitzpatrick, pp. 187–201. Praeger, Westport, Connecticut.
- Curet, L. A. (editor)
 2002 *Catálogo del centro ceremonial indígena de Tibes*. Municipio Autónomo de Ponce, Puerto Rico, Ponce.
- Curtin, M.
 1994 Carvings from the Well at New Seville: European or Amerindian Inspiration? *Jamaica Journal* 25(2):19–23.
- Dacal Moure, R., and M. Rivera de la Calle
 1996 *Art and Archaeology of Pre-Columbian Cuba*, translated by D. H. Sandweiss. University of Pittsburgh Press, Pittsburgh.
- Daily Gleaner*
 1967 Editorial, White Marl, November 1.
- Danubio, M. E.
 1987 The Decline of the Taínos: Critical Revision of the Demographic-Historical Sources. *International Journal of Anthropology* 2(3):241–245.
- Davis, R. P. S., P. C. Livingood, H. T. Ward, and V. P. Steponaitis
 1998 *Excavating Occaneechi Town: Archaeology of an Eighteenth-Century Indian Village in North Carolina*. CD-ROM for Windows. The Research Laboratories of Archaeology at the University of North Carolina at Chapel Hill, University of North Carolina Press, Chapel Hill.
- De Booy, T.
 1913 Certain Kitchen-Middens in Jamaica. *American Anthropologist* 15(3):425–434.
- De Wolf, M.
 1953 Excavations in Jamaica. *American Antiquity* 18(3):230–238.

- Deagan, K.
 1988 The Archaeology of the Spanish Contact Period in the Caribbean. *Journal of World Prehistory* 2(2):187–233.
 1996 Colonial Transformation: Euro-American Cultural Genesis in the Early Spanish-American Colonies. *Journal of Anthropological Research* 52(2): 135–160.
- Deagan, K., and J. M. Cruxent
 2002 *Columbus's Outpost among the Taínos: Spain and America at La Isabela, 1493–1498*. Yale University Press, New Haven.
- Delpuech, A.
 2001 *Guadeloupe amérindienne*. Éditions du Patrimoine, Paris.
- Dering, J. P.
 1992 A Preliminary Analysis of Ceramics from the Bellevue Site, an Inland Taíno Village Site in St. Ann Parish, Jamaica. Unpublished manuscript.
- Dering, J. P., and J. K. Southerland
 1991 The Bellevue Estate Archaeological Field Season May–June 1991. *Archaeology Jamaica* (n.s.) 4:27–29.
- Digerfeldt, G., and M. D. Hendry
 1987 An 8,000 Year Holocene Sea-Level Record from Jamaica: Implications for Interpretation of Caribbean Reef and Coastal History. *Coral Reefs* 5: 165–169.
- Donaldson, B.
 2001– In Search of Iter Boreale. *Jamaican Historical Society Bulletin* 11(8 and
 2002 9):265–270.
 2002 In Search of Iter Boreale, Part II. *Jamaican Historical Society Bulletin* 11(10):302–307.
- Donovan, S. K., and T. A. Jackson (editors)
 1994 *Caribbean Geology: An Introduction*. University of the West Indies Publishers' Association, Kingston.
- Donovan, S. K., T. A. Jackson, H. L. Dixon, and E. N. Doyle
 1995 *Eastern and Central Jamaica*. Geologists' Association Guide, No. 53. The Geologists' Association, London.
- Downer, A., and R. Sutton
 1990 *Birds of Jamaica*. Cambridge University Press, Cambridge.
- Drewett, P. L.
 1991 *Prehistoric Barbados*. Institute of Archaeology, UCL, London.
- Duerden, J. E.
 1895 Discovery of Aboriginal Indian Remains in Jamaica. *Nature* 52(1338): 173–174.
 1897 Aboriginal Indian Remains in Jamaica. *Journal of the Institute of Jamaica* 2(4):1–51.
- Dunn, O., and J. E. Kelley (editors)
 1989 *The Diario of Christopher Columbus's First Voyage to America, 1492–1493*. University of Oklahoma Press, Norman.

- du Quesnay, F. J.
 - 1965a Professor Robert Randolph Howard. *Jamaican Historical Society Bulletin* 4(4):62.
 - 1965b Opening of the Arawak Museum at White Marl. *Jamaican Historical Society Bulletin* 4(4):63.
 - 1967 Excavating at White Marl. Article, *Daily Gleaner*, November 3.
- Eltis, D., S. D. Behrendt, D. Richardson, and H. S. Klein
 - 2000 *The Trans-Atlantic Slave Trade*. CD-ROM for Windows. Cambridge University Press, Cambridge.
- Emmer, P. C., and G. C. Damas (editors)
 - 1999 *General History of the Caribbean, Vol. 2, New Societies: The Caribbean in the Long Sixteenth Century*. UNESCO Publishing/Macmillan, London.
- Eyre, L. A.
 - 1996 The Tropical Rainforests of Jamaica. *Jamaica Journal* 26(1):26–37.
- Fandrich, J. E.
 - 1991 Prehistoric Subsistence at the Upton Site: An Arawak Site in St. Ann Parish, Jamaica. *Proceedings of the Fourteenth Congress of the International Association for Caribbean Archaeology, Barbados, 1991*, pp. 227–231. Barbados.
- Fincham, A. G.
 - 1997 *Jamaica Underground: The Caves, Sinkholes, and Underground Rivers of the Island*. The Press, University of the West Indies, Kingston.
- Fincham, A. G., and A. M. Fincham
 - 1998 The Potoo Hole Pictographs. *Jamaica Journal* 26(3):2–6.
- Flower, W. H.
 - 1895 On Recently Discovered Remains of the Aboriginal Inhabitants of Jamaica. *Nature* 52(1355):607–608.
- Frink, D. S.
 - 1994 The Oxidizable Carbon Ratio (OCR): A Proposed Solution to Some of the Problems Encountered with Radiocarbon Data. *North American Archaeologist* 15(1):17–29.
 - n.d. *Oxidizable Carbon Ratio (OCR): A New Procedure for the Dating of Soil Organic Carbon*. Archaeology Consulting Team, Inc., Essex, Vermont.
- Girling, D. A. (editor)
 - 1978 Ellipse. *Everyman's Encyclopaedia*, 6th ed. J. M. Dent, London.
- Goodall, E. A., with an Introduction and Notes by M. N. Menezes
 - 2002 *Sketches of Amerindian Tribes, 1841–1843*. Macmillan Education, Oxford.
- Goodfriend, G. A.
 - 1989 Quaternary Biogeographical History of Land Snails in Jamaica. In *Biogeography of the West Indies: Past, Present, and Future*, edited by C. A. Woods, pp. 201–216. Sandhill Crane Press, Gainesville, Florida.
- Gouldwell, A. J.
 - 1998 Preliminary Report on a Shell-Midden Layer from Chancery Hall, Jamaica. Unpublished manuscript.

- Gray, C. R.
 - 1990 The Analysis of Periodic Fluctuations in Jamaica's Annual Rainfall. *Jamaican Journal of Science and Technology* 1(1):14–28.
- Green, G. W.
 - 1977 Structure and Stratigraphy of the Wagwater Belt, Kingston, Jamaica. *Overseas Geology and Mineral Resources* 48:1–21.
- Grimes, B. F. (editor)
 - 2000 *Ethnologue*, vols. 1 and 2, 14th ed. SIL International, Dallas, Texas.
- Grinsted, W. A.
 - 1953 *Supplement to Rainfall of Jamaica 1870 to 1939*. British Caribbean Meteorological Service, Kingston.
- Gunn, J. D. (editor)
 - 2000 *The Years without Summer: Tracing A.D. 536 and Its Aftermath*. BAR International Series 872, Oxford.
- Gupta, A., and R. Ahmad
 - 2000 Urban Steeplands in the Tropics: An Environment of Accelerated Erosion. *GeoJournal* 49:143–150.
- Haddon, A. C.
 - 1897 Note on the Craniology of the Aborigines of Jamaica. In J. E. Duerden, Aboriginal Indian Remains in Jamaica. *Journal of the Institute of Jamaica* 2(4):23–24.
- Harper, W. F.
 - 1961–1962 Aboriginal Amerindian Skulls of Jamaica. *Bulletin of the Scientific Research Council* 2(1–4):66–69.
- Harris, P. O'B.
 - 1995 Ethnotypology: The Basis for a New Classification of Caribbean Pottery. *Proceedings of the XVIth International Congress for Caribbean Archaeology, Basse Terre, 1995*, vol. 2:345–366. Basse Terre.
 - 2001 A Common Format for Basic Archaeological Data in Caribbean Islands: Grenada as Test Example. *Proceedings of the XVIIIth International Congress for Caribbean Archaeology, Grenada, 1999*, vol. 1:40–54. Guadeloupe.
- Haviser, J. B.
 - 1991 A Summary of Amerindian Cultural Geography Research on Curaçao, Netherlands Antilles. *Proceedings of the Twelfth Congress of the International Association for Caribbean Archaeology, Cayenne, 1987*, pp. 227–240. Martinique.
- Hendry, M. D.
 - 1977–1978 Historical Evidence of Shoreline Evolution for the Palisadoes, Kingston, Jamaica. *Journal of the Geological Society of Jamaica* 17:39–48.
 - 1981 Late Holocene Sea-Level Changes in Western Jamaica. *IGCP/INQUA Symposium on Variations in Sea Level in the Last 15,000 Years, Magnitude and Causes*. University of South Carolina, Columbia.
 - 1985 The Coastline of Jamaica: Geology, Processes and Stability. *Jamaica Journal* 18(3):57–63.

- Hendry, M. D., and G. Digerfeldt
1989 Palaeogeography and Palaeoenvironments of a Tropical Coastal Wetland and Offshore Shelf during Holocene Submergence, Jamaica. *Palaeogeography, Palaeoclimatology, Palaeoecology* 73:1–10.
- Hester, T. R., H. J. Shafer, and K. L. Feder
1997 *Field Methods in Archaeology*, 7th ed. Appendix A: Tables of Equivalents and Conversion Factors, pp. 345–349. Mayfield Publishing, Mountain View, California.
- Hill, V. G.
1978 Distribution and Potential—Clays in Jamaica. *Jamaica Journal* 42:64–75.
- Hodell, D. A., J. H. Curtis, G. A. Jones, A. Higuera-Gundy, M. Brenner, M. W. Binford, and K. T. Dorsey
1991 Reconstruction of Caribbean Climate Change over the Past 10,500 Years. *Nature* 352:790–793.
- Holmes, J. A., F. A. Street-Perrott, M. Ivanovich, and R. A. Perrott
1995 A Late Quaternary Palaeolimnological Record from Jamaica Based on Trace-Element Chemistry of Ostracod Shells. *Chemical Geology* 124: 143–160.
- Howard, R. R.
1950 *The Archeology of Jamaica and Its Position in Relation to Circum-Caribbean Culture*. Unpublished Ph.D. dissertation, Yale University, New Haven.
1956 The Archaeology of Jamaica: A Preliminary Survey. *American Antiquity* 22(1):45–59.
1961– Aboriginal Archaeology in Jamaica. *Bulletin of the Scientific Research*
1962 *Council* 2(1–4):61–65.
1965 New Perspectives on Jamaican Archaeology. *American Antiquity* 31(2): 250–255.
- Howard, R. R., and C. B. Lewis
1961– The Arawak Village Site at White Marl. *Jamaican Historical Society Bulletin*
1962 3(4):59–63; 3(5):79–82.
- Hughes, I. G. (editor)
1973 The Mineral Resources of Jamaica. *Geology Survey Department Bulletin* 8:1–79. Mines and Geology Division, Kingston.
- Hulme, P.
1988 Chiefdoms of the Caribbean: Review Article. *Critique of Anthropology* 8(2):105–118.
- Humfrey, M.
1975 *Seashells of the West Indies: A Guide to the Marine Molluscs of the Caribbean*. Collins, New York.
- The Institute of Jamaica
1937 Frank Cundall, 1858–1937. The Institute of Jamaica, Kingston.
- Jennings, R.
1999 *Using Microsoft Access 2000*. Que, Indianapolis.

- Jones, A. R.
 1985 Dietary Change and Human Population at Indian Creek, Antigua. *American Antiquity* 50(3):518–536.
Journal of the Institute of Jamaica
- 1896 Jamaica Wooden Images in the British Museum. *Journal of the Institute of Jamaica* 2(3):303–304.
- Jury, W. W.
 1967 Historic Sites. Letter, *Daily Gleaner*, October 31.
- Kaye, Q.
 1999 Intoxicant Use in the Prehistoric Caribbean with Particular Reference to Spouted Ceramic Inhaling Bowls. *Papers from the Institute of Archaeology* 10:55–73.
- Keegan, W. F.
 1991 Introduction. In *Earliest Hispanic/Native American Interactions in the Caribbean*, edited by W. F. Keegan, pp. xi–xxv. Spanish Borderlands Sourcebooks, Garland, New York.
 1992 *The People Who Discovered Columbus: The Prehistory of the Bahamas*. University Press of Florida, Gainesville.
 1994 West Indian Archaeology, 1, Overview and Foragers. *Journal of Archaeological Research* 2(3):255–284.
 1995 Recent Climatic and Sea-Level Fluctuations in Relation to West Indian Prehistory. *Proceedings of the XVIth International Congress for Caribbean Archaeology, Basse Terre, 1995*, vol. 1:95–104. Basse Terre.
 1996 West Indian Archaeology, 2, After Columbus. *Journal of Archaeological Research* 4(4):265–294.
 1997 *Bahamian Archaeology*. Media Publishing, Nassau.
 2000 West Indian Archaeology, 3, Ceramic Age. *Journal of Archaeological Research*, 8(2):135–167.
 2001 Archaeological Investigations on Île à Rat, Haiti: Avoid the Oid. *Proceedings of the XVIIIth International Congress for Caribbean Archaeology, Grenada, 1999*, vol. 2:233–239. Guadeloupe.
 2002 Preliminary Reports on Archaeological Investigations at Paradise Park, Westmoreland, Jamaica. Electronic document, <http://www.flmnh.ufl.edu/anthro/caribarch/ParadisePark>.
 2004 Islands of Chaos. In *Late Ceramic Age Societies in the Eastern Caribbean*, edited by A. Delpuech and C. L. Hofman, pp. 33–44. BAR International Series 1273, Oxford.
 2006 Archaic Influences in the Origins and Development of Taíno Societies. *Caribbean Journal of Science* 42(1):1–10.
- Keegan, W. F., and M. D. Maclachlan
 1989 The Evolution of Avunculocal Chiefdoms: A Reconstruction of Taíno Kinship and Politics. *American Anthropologist* 91(3):613–630.
- Keegan, W. F., R. W. Portell, and J. Slapcinsky
 2003 Changes in Invertebrate Taxa at Two Pre-Columbian Sites in South-

- western Jamaica, A.D. 800–1500. *Journal of Archaeological Science* 30:1607–1617.
- Kerchache, J.
1994 *L'art des sculpteurs Taïnos—Chefs-d'oeuvre des Grandes Antilles précolombiennes*. Musées de la Ville de Paris, Paris.
- Kiple, K. F., and K. C. Ornelas
1996 After the Encounter: Disease and Demographics in the Lesser Antilles. In *The Lesser Antilles in the Age of European Expansion*, edited by R. L. Paquette and S. L. Engerman, pp. 50–67. University Press of Florida, Gainesville.
- Kirch, P. V.
2000 *On the Road of the Winds: An Archaeological History of the Pacific Islands before European Contact*. University of California Press, Berkeley.
- Kouwenberg, S.
2005a Taíno's Affiliations with Mainland Arawakan. Unpublished manuscript.
2005b The Mixed Language Status of Island Carib. Unpublished manuscript.
- Kozłowski, J. K.
1974 *Preceramic Cultures in the Caribbean*. Zeszyty Naukowe Uniwersytetu Jagiellońskiego, CCCLXXXVI, Prace Archeologiczne 20. Państwowe Wydawnictwo Naukowe, Warsaw and Krakow.
1980 In Search of the Evolutionary Pattern of the Preceramic Cultures of the Caribbean. *Boletín del Museo del Hombre Dominicano* 13:61–79.
- Lalor, G. C.
1995 *A Geochemical Atlas of Jamaica*. Canoe Press, Kingston.
- Lalueza-Fox, C., M. T. P. Gilbert, A. J. Martínez-Fuentes, F. Calafell, and J. Bertranpetit.
2003 Mitochondrial DNA from Pre-Columbian Ciboneys from Cuba and the Prehistoric Colonization of the Caribbean. *American Journal of Physical Anthropology* 121:97–108.
- Lechler, G. P.
1972 The Last Days of Fort Nugent. *Jamaican Historical Society Bulletin* 5(14, 15, 16):188–189.
2000 Chancery Hall, St Andrew: Taíno Site on the Outskirts of Kingston, 1, Discovery and First Finds from Chancery Hall. *Archaeology Jamaica* (n.s.) 12:9–10.
- Lee, J. W.
1961–1962 Arawak Stone Artifacts. *Bulletin of the Scientific Research Council* 2(1–4):70–72.
1964 The Jamaica Columbus Found. *Jamaican Historical Society Bulletin* 3(15):234–243.
1980 Jamaican Redware. *Proceedings of the Eighth International Congress for the Study of the Pre-Columbian Cultures of the Lesser Antilles, St Kitts, 1979*, pp. 597–609. Anthropological Research Papers No. 22, Arizona State University, Tempe.
1985 A Pre-Columbian Gold Artifact from Jamaica. *Proceedings of the Tenth Inter-*

- national Congress for the Study of the Pre-Columbian Cultures of the Lesser Antilles, Fort-de-France, Martinique, 1983*, pp. 343–345. Université de Montréal, Montreal.
- 1990 Petroglyphs of Jamaica. *Proceedings of the Eleventh Congress of the International Association for Caribbean Archaeology, San Juan, 1985*, pp. 153–159, Figures 1–8. San Juan, Puerto Rico.
- 1992 Chronology of Archaeology in St. Ann. *Archaeology Jamaica* (n.s.) 5:15–20.
- Lemonick, M. D.
1998 Before Columbus. *Time*, October 19:36–37.
- Lewis, C. B.
1957 The Jamaican Arawaks. *Jamaican Historical Society Bulletin* 2(1):26–29.
1960 Fort Nugent. *Jamaican Historical Society Bulletin* 2(13): 216–217.
- Longley, G. C.
1914 Kitchen Middens of Jamaica. *American Museum Journal* 14:295–303.
- López y Sebastián, L. E.
1982 Sevilla la Nueva (Jamaica): Un proyecto de arqueología colonial. *Revista Española de Antropología Americana* 12:292–300.
1986 El proyecto Sevilla la Nueva, Jamaica. Primera fase. *Revista Española de Antropología Americana* 16:295–302.
- Loubser, J. H. N., and P. Allsworth-Jones
In press. Caring for the Spirit Helpers: Recording, Graffiti Removal, Interpretation, and Management of the Warminster/Genus Rock Shelter, Jamaica.
- Lovén, S.
1935 *Origins of the Tainan Culture, West Indies*. Elanders Boktryckeri Aktiebolag, Göteborg, Sweden.
- MacCormack, R. C.
1898 Indian Remains in Vere, Jamaica. *Journal of the Institute of Jamaica* 2(5):444–448.
- Maharaj, R.
1996 Report of a Field Meeting to the Treasure Beach Coastal Plain, SW Jamaica, October 21–22, 1995. *Journal of the Geological Society of Jamaica* 31:47–52.
- Manuels, M.
2001 Condition and Analysis Report of Four Taíno Carvings at the National Gallery of Jamaica. Unpublished report. The Sherman Fairchild Center for Objects Conservation, Metropolitan Museum of Art, New York.
- Mathewson, R. D.
1972a History from the Earth: Archaeological Excavations at Old King's House. *Jamaica Journal* 6(1):3–11.
1972b Jamaican Ceramics: An Introduction to 18th Century Folk Pottery in West African Tradition. *Jamaica Journal* 6(2):54–56.
- Matley, C. A.
1951 *Geology and Physiography of the Kingston District, Jamaica*. Crown Agents for the Colonies, London.

McGinnis, S. A. M.

- 1998 *Ideographic Expression in the Precolumbian Caribbean*. Ph.D. dissertation (1997) html version (1998), University of Texas at Austin. CD-ROM for Windows. Austin, Texas.
- 2001 Patterns, Variations, and Anomalies in Ideographic Expression in the Precolumbian Caribbean. *Proceedings of the XVIIIth International Congress for Caribbean Archaeology, Grenada, 1999*, vol. 2:99–114. Guadeloupe.

Meggers, B. J.

- 1968 The Theory and Purpose of Ceramic Analysis. *Proceedings of the Second International Congress for the Study of Pre-Columbian Cultures in the Lesser Antilles, Barbados, 1967*, pp. 9–20. Barbados Museum, Barbados.

Mehring, A. L.

- 1965 Land Snails of Jamaica. Unpublished manuscript.

Menezes, M. N. (editor)

- 2002 *Sketches of Amerindian Tribes, 1841–1843*, by E. A. Goodall, 2nd ed. Macmillan Education, Oxford.

Michels, J. W.

- 1973 *Dating Methods in Archaeology*. Seminar Press, New York.

Miller, K. M.

- 2003 Caribbean Datums and the Integration of Geographical Data. *Caribbean Journal of Earth Science* 37:1–10.

Mugnier, C. J.

- 2003 Grids and Datums: Jamaica. *Photogrammetric Engineering and Remote Sensing*, pp. 497–500, May.

Nature

- 1937 Prof. J. E. Duerden, October 2:576.

New Encyclopædia Britannica, 15th ed.

- 1998 Measurement Systems. Encyclopædia Britannica, Chicago.

Newsom, L.

- 1995 Mangroves and Root Crops: The Archaeobotanical Record from En Bas Saline, Haiti. *Proceedings of the XVIth International Congress for Caribbean Archaeology, Basse Terre, 1995*, vol. 2:52–66. Basse Terre.

Newsom, L., and E. S. Wing

- 2004 *On Land and Sea: Native American Uses of Biological Resources in the West Indies*. University of Alabama Press, Tuscaloosa.

Oliver, J. R.

- 1989 *The Archaeological, Linguistic, and Ethnohistorical Evidence for the Expansion of Arawakan into Northwestern Venezuela and Northeastern Colombia*. Ph.D. thesis, University of Illinois, Urbana-Champaign. University Microfilms International (#8916291), Ann Arbor.
- 1998 *El centro ceremonial de Caguana, Puerto Rico*. BAR International Series 727, Oxford.
- 2000 Gold Symbolism among Caribbean Chiefdoms: Of Feathers, Çibas, and Guanín Power among Taíno Elites. In *Precolumbian Gold*, edited by C. McEwan, pp. 196–219. British Museum Press, London.

- Oliver, W. L. R.
1983 Looking for Conies. *Jamaica Journal* 16(2):50–57.
- Orton, C., P. Tyers, and A. Vince
1993 *Pottery in Archaeology*. Cambridge University Press, Cambridge.
- Osborne, F. J.
1965 Spanish Jamaica. *Jamaican Historical Society Bulletin* 4(1):2–13.
1973 Iter Boreale. *Jamaican Historical Society Bulletin* 6(3/4):39–43.
1974 Spanish Church St. Ann's Bay. *Jamaica Journal* 8(2 and 3):33–35.
- Ottaway, B.
1973 Dispersion Diagrams: A New Approach to the Display of Carbon-14 Dates. *Archaeometry* 15:5–12.
- Padrón, F. M.
1952 *Jamaica Española*. Consejo Superior de Investigaciones Científicas, Seville.
2003 *Spanish Jamaica*, translated by P. E. Bryan. Ian Randle, Kingston.
- Paul, C. R. C., P. Hales, R. A. Perrott, and F. A. Street-Perrott
1993 The Freshwater Mollusca of Jamaica. In *Biostratigraphy of Jamaica, Geological Society of America, Memoir 182*, edited by R. M. Wright and E. Robinson, pp. 363–369. Boulder, Colorado.
- Payn, G., and S. Morley (editors)
1982 *The Noël Coward Diaries*. Little, Brown, Boston.
- Payne, D. L.
1993 Una visión panorámica de la familia lingüística Arawak. In *Estado actual de la clasificación de las lenguas indígenas de Colombia*, edited by M. L. Rodríguez de Montes, pp. 127–164. Instituto Caro y Cuervo, Bogotá.
- Piperno, D. R., and D. M. Pearsall
1998 *The Origins of Agriculture in the Lowland Neotropics*. Academic Press, San Diego.
- Porter, A. R. D.
1990 *Jamaica, a Geological Portrait*. Institute of Jamaica, Kingston.
2001– Imported and Local Stone Use in Pre-1900 Jamaica. *Jamaican Historical Society Bulletin* 11(8 and 9):232–256.
2002
- Porter, A. R. D., T. A. Jackson, and E. Robinson
1982 *Minerals and Rocks of Jamaica*. Jamaica Publishing House, Kingston.
- Randall, J. E.
1968 *Caribbean Reef Fishes*. T. F. H. Publications, Jersey City, New Jersey.
- Randel, W.
1960 Survival of Pre-English Place Names in Jamaica. *Names* 8(1):24–29.
- Rashford, J.
1993 Arawak, Spanish, and African Contributions to Jamaica's Settlement Vegetation. *Jamaica Journal* 24(3):17–23.
1994 Jamaica's Settlement Vegetation, Agroecology, and the Origin of Agriculture. *Caribbean Geography* 5(1):32–50.
- Rega, E. A.
2006 Human Skeletal Remains from Somerville Cave, Clarendon County, Ja-

- maica. *Abstracts of the SAA 71st Annual Meeting*, p. 336, San Juan, Puerto Rico.
- Reid, B.
- 1990 Archaeological Study of the Site of Firefly. *Archaeology Jamaica* (n.s.) 1:8.
- 1991 Students Help Excavate Martello Tower (Harbour View) Kingston. *Archaeology Jamaica* (n.s.) 4:7–9.
- 1994 Taínos Not Arawaks: The Indigenous Peoples of Jamaica and the Greater Antilles. *Caribbean Geography* 5(1):67–71.
- n.d. The Firefly/Wentworth Amerindian Project (December 1988). Unpublished manuscript.
- Reitz, E. J., and E. S. Wing
- 1999 *Zooarchaeology*. Cambridge University Press, Cambridge.
- Rice, P. M.
- 1987 *Pottery Analysis: A Sourcebook*. University of Chicago Press, Chicago.
- Robertson, J.
- 2002 The Last Cromwellian Victory: Rio Nuevo, 15–17 June 1658. *Jamaican Historical Society Bulletin* 11(10):285–294.
- Robinson, E.
- 1996 Review of J. T. Greensmith, ed., Geologists' Association Guide No. 53: Field Guide to Eastern and Central Jamaica. *Journal of the Geological Society of Jamaica* 31:54–55.
- Rodrigues, A. D.
- 2000 Panorama das línguas indígenas da Amazônia. In *As línguas amazônicas hoje*, edited by F. Queixalós and O. Renault-Lescure, pp. 15–28. Instituto Socioambiental, São Paulo.
- Rodríguez, M.
- 1999 Excavations at Maruca, a Preceramic Site in Southern Puerto Rico. In *Proceedings of the Seventeenth International Congress for Caribbean Archaeology, Nassau, July, 1997*, edited by J. H. Winter, pp. 166–180. Molloy College, Rockville Centre, New York.
- Roe, P. G.
- 1982 *The Cosmic Zygote: Cosmology in the Amazon Basin*. Rutgers University Press, New Brunswick, New Jersey.
- 1991a The Petroglyphs of Maisabel: A Study in Methodology. *Proceedings of the Twelfth Congress of the International Association for Caribbean Archaeology, Cayenne, 1987*, pp. 317–370. Martinique.
- 1991b Cross-Media Isomorphisms in Taíno Ceramics and Petroglyphs from Puerto Rico. *Proceedings of the Fourteenth Congress of the International Association for Caribbean Archaeology, Barbados, 1991*, pp. 637–671. Barbados.
- 1995 Utilitarian Sculpture: Pictorial Kinesics and Dualism in Dominican Republic Chican Ostionoid Pottery. *Proceedings of the XVIth International Congress for Caribbean Archaeology, Basse Terre, 1995*, vol. 2:272–291. Basse Terre.

- Roe, P. G., J. R. Meléndez, and P. DeScioli
 1999 The Cueva de Mora (Comerio, PR) Petroglyphs and Pictographs: A Documentary Project. In *Proceedings of the Seventeenth International Congress for Caribbean Archaeology, Nassau, July, 1997*, edited by J. H. Winter, pp. 20–59. Molloy College, Rockville Centre, New York.
- Rogers, O. B., and L. E. Saunders
 1963 *The Rainfall of Jamaica*. Scientific Research Council, Kingston.
- Roobol, M. J., and J. W. Lee
 1976 Petrography and Source of Some Arawak Rock Artifacts from Jamaica. *Proceedings of the Sixth International Congress for the Study of Pre-Columbian Cultures of the Lesser Antilles, Pointe à Pitre, Guadeloupe, 1975*, pp. 304–313. Centre Universitaire, Guadeloupe.
- Rosenberg, G.
 1993 A Database Approach to Studies of Molluscan Taxonomy, Biogeography, and Diversity, with Examples from Western Atlantic Marine Gastropods. *American Malacological Bulletin* 10:257–266.
- Rothschild, B. M., F. Luna Calderón, A. Coppa, and C. Rothschild
 2000 First European Exposure to Syphilis: The Dominican Republic at the Time of Columbian Contact. *Clinical Infectious Diseases* 31:936–941.
- Rouse, I.
 1948 Part 3: The West Indies. The Ciboney. The Arawak. The Carib. In *Handbook of South American Indians, Vol. 4, The Circum-Caribbean Tribes*, edited by J. H. Steward, *Smithsonian Institution, Bureau of American Ethnology Bulletin*, 143:495–565. Cooper Square Publishers, New York.
 1964 Prehistory of the West Indies. *Science* 144:499–513.
 1965 Caribbean Ceramics: A Study in Method and in Theory. In *Ceramics and Man*, edited by F. R. Matson, pp. 88–103. Viking Fund Publications in Anthropology, 41. Wenner-Gren Foundation for Anthropological Research, New York.
 1987 Whom Did Columbus Discover in the West Indies? *American Archaeology* 6(2):83–87.
 1990 Social, Linguistic, and Stylistic Plurality in the West Indies. *Proceedings of the Eleventh Congress of the International Association for Caribbean Archaeology, San Juan, 1985*, pp. 56–65. San Juan, Puerto Rico.
 1991 Ancestries of the Taínos: Amazonian or Circum-Caribbean. *Proceedings of the Thirteenth International Congress for Caribbean Archaeology, Curaçao, 1989*, Part 2:682–692. Curaçao.
 1992 *The Tainos: Rise and Decline of the People Who Greeted Columbus*. Yale University Press. New Haven.
- Rouse, I., and C. Moore
 1985 Cultural Sequence in Southwestern Haiti. *Proceedings of the Tenth International Congress for the Study of the Pre-Columbian Cultures of the Lesser Antilles, Fort-de-France, Martinique, 1983*, pp. 3–21. Université de Montréal, Montreal.

- Ruhlen, M.
1991 *A Guide to the World's Languages*. Edward Arnold, London, Melbourne, Auckland.
- Rust, S. P.
2001 The Garífuna. *National Geographic* 200(3):102–113.
- Santos, A. L., P. Allsworth-Jones, and E. Rodriques
2002 Pathological Evidence in the Pre-Columbian Human Remains from the Lee Collection (Jamaica). *Antropologia Portuguesa* 19:121–138.
- Saunders, N. J., and D. Gray
1996 Zemís, Trees, and Symbolic Landscapes: Three Taíno Carvings from Jamaica. *Antiquity* 70(270):801–812.
- Scudder, S.
1991 Early Arawak Subsistence Strategies on the South Coast of Jamaica. *Proceedings of the Thirteenth International Congress for Caribbean Archaeology, Curaçao, 1989*, Part 1:297–312. Curaçao.
1992 Early Arawak Subsistence Strategies: The Rodney Site of Jamaica. *Archaeology Jamaica* (n.s.) 6:28–43.
1994 Species Identification from Upton A-43 Site—Jamaica. *Archaeology Jamaica* (n.s.) 8:4–7.
- Senior, O.
2003 *Encyclopedia of Jamaican Heritage*. Twin Guinep Publishers, Kingston.
- Shepard, A. O.
1956 *Ceramics for the Archaeologist*. Carnegie Institution of Washington, Washington, D.C.
- Sherlock, P. M.
1939 *The Aborigines of Jamaica*. The Institute of Jamaica, West India Committee, London.
- Siegel, P. E.
1996 An Interview with Irving Rouse. *Current Anthropology* 37(4):671–689.
- Siegel, P. E. (editor)
1989 *Early Ceramic Population Lifeways and Adaptive Strategies in the Caribbean*. BAR International Series 506, Oxford.
2005 *Ancient Borinquen*. University of Alabama Press, Tuscaloosa.
- Silverberg, J., R. L. Vanderwal, and E. S. Wing
1972 *The White Marl Site in Jamaica: Report of the 1964 Robert R. Howard Excavation*. Unpublished report. Department of Anthropology, University of Wisconsin, Milwaukee, Wisconsin.
- St. Clair, J.
1969 Proposal for Archaeological Research Summer 1969. Unpublished manuscript. Institute of Jamaica, Kingston.
1970 Problem Orientated Archaeology. *Jamaica Journal* 4(1):7–10.
- Stevens-Arroyo, A.
1988 *Cave of the Jagua: The Mythological World of the Taínos*. University of New Mexico Press, Albuquerque.

- Stewart, R. S.
 2002 Orienteering in Jamaica. Electronic document, <http://www.jamaicancaves.org>, accessed February 26, 2007.
 2003a JAD69 and the GPS. Electronic document, <http://www.jamaicancaves.org>, accessed February 26, 2007.
 2003b New Jamaican Datum—JAD2001. Electronic document, <http://www.jamaicancaves.org>, accessed February 26, 2007.
- Stokes, A. V.
 1995 Understanding Prehistoric Subsistence in the West Indies Using Stable Isotope Analysis. *Proceedings of the XVth International Congress for Caribbean Archaeology, San Juan, 1993*, pp. 191–200. San Juan, Puerto Rico.
- Stokes, B. J.
 2002 Prehistoric Occupation of Rio Nuevo Bay. *Jamaican Historical Society Bulletin*, 11(10):295–297.
- Stoudemire, S. A. (editor and translator)
 1959 *Natural History of the West Indies*, by Gonzalo Fernández de Oviedo. University of North Carolina Press, Chapel Hill.
- Street-Perrott, F. A., P. E. Hales, R. A. Perrott, J. Fontes, V. R. Switsur, and A. Pearson
 1993 Late Quaternary Palaeolimnology of a Tropical Marl Lake: Wallywash Great Pond, Jamaica. *Journal of Palaeolimnology* 9:3–22.
- Sturtevant, W. C.
 1961 Taíno Agriculture. *Antropologica Supplement No. 2, The Evolution of Horticultural Systems in Native South America: Causes and Consequences—A Symposium*, pp. 69–82. Caracas.
- Sued-Badillo, J. (editor)
 2003 *General History of the Caribbean, Vol. 1, Autochthonous Societies*. UNESCO Publishing, Paris, and Macmillan, London and Oxford.
- Swanton, J. R.
 1952 *The Indian Tribes of North America*. Smithsonian Institution, Washington, D.C.
- Tabío, E. E., and E. Rey
 1985 *Prehistoria de Cuba*, 2nd ed. Editorial de Ciencias Sociales, Havana.
- Taylor, D.
 1977 *Languages of the West Indies*. Johns Hopkins University Press, Baltimore.
- Town Planning Department and United Nations Development Programme (UNDP)
 1971 *National Atlas of Jamaica*. Ministry of Finance and Planning, Kingston.
- Tykot, R. H., N. J. van der Merwe, and N. Hammond
 1996 Stable Isotope Analysis of Bone Collagen, Bone Apatite, and Tooth Enamel in the Reconstruction of Human Diet: A Case Study from Cuello, Belize. In *Archaeological Chemistry: Organic, Inorganic, and Biochemical Analysis*, edited by M. V. Orna, pp. 355–365. American Chemical Society Symposium Series 625, Washington, D.C.
- Tyndale-Biscoe, J. S.
 1952 The University Midden. *Jamaican Historical Society Bulletin* 1(2):33.

References Cited / 305

- 1954 Arawak Specimens from Some Middens of Jamaica. *Jamaican Historical Society Bulletin* 1(10):123–126.
- 1956 Abbey Cave, Manchester. *Jamaican Historical Society Bulletin* 1(14):174.
- 1960a Bowden Kitchen Midden. *Jamaican Historical Society Bulletin* 2(15): 240–242.
- 1960b The Guns of Port Morant. *Jamaican Historical Society Bulletin* 2(15): 260–261.
- 1962 The Jamaican Arawak—His Origin, History, and Culture. *Jamaican Historical Review* 3(3):1–9.
- van der Merwe, N. J., J. A. Lee-Thorp, and J. S. Raymond
 - 1993 Light, Stable Isotopes, and the Subsistence Base of Formative Cultures at Valdivia, Ecuador. In *Prehistoric Human Bone: Archaeology at the Molecular Level*, edited by J. B. Lambert and G. Grupe, pp. 63–97. Springer Verlag, Berlin.
- Vanderwal, R. L.
 - 1965– Jamaican Pre-History. *Jamaican Historical Society Bulletin* 4(4):64–70;
 - 1966 5(5):102–104.
- Vanderwal, R. L.
 - 1967 Report on 1967 Field Season and Current Programme. Unpublished manuscript. Institute of Jamaica, Kingston.
 - 1968a The Prehistory of Jamaica: A Ceramic Study. Unpublished master's thesis, University of Wisconsin, Milwaukee.
 - 1968b Problems of Jamaican Pre-History. *Jamaica Journal* 2(3):10–13.
 - 1968c Archaeological Classification. *Proceedings of the Second International Congress for the Study of Pre-Columbian Cultures in the Lesser Antilles, Barbados, 1967*, pp. 21–30. Barbados Museum, Barbados.
 - 1968d Preliminary Report on 1968 Season. Unpublished manuscript. Institute of Jamaica, Kingston.
- Vega, B.
 - 2001 *Las frutas de los Taínos*, 2nd ed. Fundación Cultural Dominicana, Santo Domingo.
- Veloz Maggiolo, M.
 - 1972 *Arqueología prehistórica de Santo Domingo*. McGraw-Hill, Singapore.
 - 1979 Notas sobre modelos de ocupación prehistórica en la isla de Santo Domingo. *Boletín del Museo del Hombre Dominicano* 12:49–57.
 - 1993 *La isla de Santo Domingo antes de Colón*. Banco Central de la República Dominicana, Santo Domingo.
- Walker, D. J. R.
 - 1992 *Columbus and the Golden World of the Island Arawaks*. Ian Randle, Jamaica.
- Wallace, V.
 - 1992 The Socio-Cultural Life of Arawak Indians of Jamaica: An Archaeological Evaluation. *Archaeology Jamaica* n.s. 6:73–96.
- Walters, S.
 - 1996 Field Report, Test Pit Excavation, Chancery Hall. Unpublished manuscript.

- Warmke, G. L., and R. T. Abbott
1961 *Caribbean Seashells*. Livingston Publishing, Narberth, Pennsylvania.
- Watson, K.
1988 Amerindian Cave Art in Jamaica: Mountain River Cave, St. Catherine. *Jamaica Journal* 21(1):13–20.
- Wesler, K. W.
2001 *Excavations at Wickliffe Mounds*. University of Alabama Press, Tuscaloosa.
- Wetherington, R. K. (editor)
1978 *The Ceramics of Kaminaljuyu, Guatemala*. Pennsylvania State University Press, University Park.
- White, T. D.
1991 *Human Osteology*. Academic Press, San Diego.
- Wilkins, L.
2001 Impact of Hunting on Jamaican Hutia (*Geocapromys brownii*) Populations: Evidence from Zooarchaeology and Hunter Surveys. In *Biogeography of the West Indies: Patterns and Perspectives*, edited by C. A. Woods and F. E. Sergile, pp. 529–545. CRC Press, Boca Raton, Florida.
- Wilman, J.
1992– An Archaeological Investigation of the Upton Site (A-43) St. Ann, Jamaica.
1993 *Archaeology Jamaica* (n.s.) 6:17–27; 7:24.
- Wilson, S. M.
1990a Taíno Elite Integration and Societal Complexity on Hispaniola. *Proceedings of the Eleventh Congress of the International Association for Caribbean Archaeology, San Juan, 1985*, pp. 517–521. San Juan, Puerto Rico.
1990b *Hispaniola: The Chiefdoms of the Caribbean in the Early Years of European Contact*. University of Alabama Press, Tuscaloosa.
1995 Preceramic Connections between the Caribbean and the Yucatán Peninsula. *Proceedings of the XVIth International Congress for Caribbean Archaeology, Basse Terre, 1995*, vol. 2:391–399. Basse Terre.
- Wilson, S. M. (editor)
1997 *The Indigenous People of the Caribbean*. University Press of Florida, Gainesville.
- Wing, E. S.
1993 The Realm between Wild and Domesticated. In *Skeletons in Her Cupboard*, edited by A. Clason, S. Payne, and H. Uerpmann, pp. 243–250. Oxbow Monograph 34. Oxbow, Oxford.
1995 Land Crab Remains in Caribbean Sites. *Proceedings of the XVIth International Congress for Caribbean Archaeology, Basse Terre, 1995*, vol. 1:105–112. Basse Terre.
2001 Patterns of Resource Use in the Prehistoric Caribbean. *Proceedings of the XVIIIth International Congress for Caribbean Archaeology, Grenada, 1999*, vol. 2:78–86. Guadeloupe.
- Wing, E. S., and S. R. Wing
1995 Prehistoric Ceramic Age Adaptation to Varying Diversity of Animal Re-

References Cited / 307

- sources along the West Indian Archipelago. *Journal of Ethnobiology* 15(1): 119–148.
- Wood, P. A.
1976 The Evolution of Drainage in the Kingston Area. *Journal of the Geological Society of Jamaica* 15:1–6.
- Woodley, J. D.
1968 A History of the Jamaican Fauna. *Jamaica Journal* 2(3):14–20.
- Woodward, R. P.
1988 The Charles Cotter Collection: A Study of the Ceramic and Faunal Remains from Sevilla la Nueva. Unpublished master's thesis. Texas A&M University, College Station.
2006 Taíno Ceramics from Post-Contact Jamaica. In *The Earliest Inhabitants: The Dynamics of the Jamaican Taíno*, edited by L.-G. Atkinson, pp. 161–174. University of the West Indies Press, Kingston.
- Wynter, S.
1988 *New Seville, 1509–1536: Major Facts, Major Questions*. Jamaica National Heritage Trust, Kingston.
- Yates, G. S., and R. W. Thompson
1959– Some Provisional Notes on the Spanish Place-Names of Jamaica. *Jamaican Historical Society Bulletin* 2(11):172–175; 2(12):197–199; 2(13):211–213.
- Zans, V. A., L. J. Chubb, H. R. Versey, J. B. Williams, E. Robinson, and D. L. Cooke
1962 *Synopsis of the Geology of Jamaica: An Explanation of the 1958 Provisional Geological Map of Jamaica*. Geological Survey Department, Kingston.

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